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THE

Gentleman's Diary,

OR THE

MATHEMATICAL REPOSITORY;

An ALMANACK

For the YEAR of our LORD 1755.

Being the Third after BISSEXTILE, or LEAP YEAR.

Containing many uſeful and entertaining Particulars, peculiarly adapted to the ingenious Gentlemen engaged in the delightful Study and Practice of the MATHEMATICKS.

The Fifteenth *Almanack* publiſh'd of this Kind; And the Third of the NEW STYLE in *England.*

——— Quâ causâ argentea Phœbe
Paſſibus haud æquis graditur; cur ſubdita nulli
Hactenus Aſtronomo numerorum fræna recuſat:
Cur remeant Nodi, curque Auges progrediuntur.
——— Quantis refluum vaga Cynthia pontum
Viribus impellit; dum fractis fluctibus ulvam
Deſerit, ac Nautis ſuſpectas nudat arenas,
Alternis vicibus ſuprema ad littora pulſans.

LONDON,
Printed for the Company of STATIONERS.
MDCCLV.

Juſt Publiſhed (Price bound, 6 d.)

A GUIDE to PRONUNCIATION and ORTHOGRAPHY:

In EASY VERSE.

Whereby they that have learn'd *Engliſh only*, may attain to *ſpeak* and *write* as *exactly* as thoſe that have had a *liberal Education*.

To which is added,

An Alphabetical Collection of One Thouſand Words, *nearly alike* in *Sound*, but *different* in *Senſe* and *Spelling*.

Alſo an Explanation of *Abbreviations*, *Notes of Reference*, and *other Marks* that frequently occur in *Books* and *Writings*.

By SAMUEL HAMMOND, Maſter of the *Blue-Coat-School* in NOTTINGHAM.

Recommended by ſeveral *Eminent School Maſters*, and other *ingenious Perſons*.

London: Printed for THOMAS FIELD, at the *Wheat Sheaf*, the Corner of *Paternoſter-Row*, *Cheapſide* and the AUTHOR; and ſold by the Bookſellers in Town and Country.

ADVERTISEMENT.

ALL Perſons who are pleaſed to be CONTRIBUTORS to this DIARY; by anſwering the QUESTIONS, ÆNIGMAS, &c. or by ſending us new ones, or other Subjects proper for the WORK; are deſired to ſend them, and their Solutions, along with them, before the firſt Day of *May* 1754, directed for *The Authors of the* GENTLEMAN's DIARY, to be left with Mr. *JOSEPH HOW*, at the *White Horſe* at *Cripplegate*, LONDON: or, with Mr. *THOMAS PEAT*, in *Caſtlegate*, *Nottingham* (Poſt paid).

To the PUBLICK.

HAVING always more Room in the Kalendar Part of our Diary than we can poſſibly fill up with *good Weather*; we *expect* that an exact Account of all the FAIRS in *England*, as fixed ſince the Regulation of the *Style*, will ſupply that Room better than *bad Weather*; and alſo be of more general Service to *Tradeſmen*, *Dealers*, &c. according to the *Plan* in the KALENDAR this Year; and if this be agreeable, ſhall for the future publiſh them annually, according to the beſt Information we can procure from our Contributors in their reſpective Neighbourhoods, &c.

JANUARY hath xxxi Days.

M D	☉ Decl. South
1	23° 2
6	22 32
11	21 50
16	20 58
21	19 55
26	18 44

Last Quarter the 5 Day, a quarter past 1 Afternoon.
New Moon the 12th, 3 Min. before 1 Afternoon
First Quarter the 20th, a Quarter past Noon,
Full Moon the 28th, 3 quarters after 2 Morn.

1	W	Circumcision, New Years Day.	7	A 52	2	M 15
2	Th	*This Year will begin with just such*	9	8	3	10
3	F	*Weather as the last ended*, &c.	10	23	4	1
4	S	Days increas'd 14 minutes.	11	40	4	54
5	E	2 S. aft. Christmas Old Christm. D	Morn.		5	44
6	M	Epiph. Christ's Star ap. to the Gentiles	0	53	6	35
7	Tu	Day 8 hours, Night 16 hours long	2	6	7	29
8	W	Lucian, Priest and Martyr.	3	20	8	19
9	Th	Canterbury.	4	31	9	14
10	F	Princess ELIZABETH born.	5	36	10	9
11	S	Days encreased 26 min.	6	35	11	2
12	E	1 S. after Epiph. Old New-Years-D.	☽ Sets		11	56
13	M	Hillary Bish. and Con. *Preston*. Plow M	5	A 38	0	A 48
14	Tu	*January Weather as usual,*	6	43	1	36
15	W	*and so continues to the End.*	7	50	2	24
16	Th	Day 8. hours 20 min. long.	8	54	3	10
17	F	at *Nottingham*, *Tavistock*, Devonsh.	9	57	3	53
18	S	at *Grampound*, Cornwall,	10	59	4	34
19	E	2 Sunday after Epiphany, [*Preston*.	Morn.		5	17
20	M	Fabian B. of Rom. Oct. Hil. 1. Ret.	0	1	5	58
21	Tu	Agnes, Rom. V. & Mar. *Bristol*.	1	3	6	44
22	W	Vinc. Span. Deac. Mar. [*Melt. Mow.*	2	6	7	28
23	Th	Hillary Term begins.	3	8	8	16
24	F	*Derby*.	4	5	9	7
25	S	St. PAUL's Conversion.	5	1	10	0
26	E	Septuagesima Sunday.	5	51	10	57
27	M	Quind Hil. 2. Ret.	6	38	11	54
28	Tu	Days 8 hours 54 Min. long.	☽ Rises		Morn.	
29	W	*Grampound*, Cornwall.	6	A 40	0	48
30	Th	K. CHAR. I. martyr'd at *Whitehall*	7	57	1	44
31	F	12 min. past 1, 1649.	9	16	2	37

M D	☉ Rises	☉ Sets	♄ Sets	♃ Rises	♂ Rises	♀ Sets	☿ Rises	Cl. fast.
1	8h 4'	3 56'	4A 34	9A 57	6M 45	5A 52	6 M 15	4m 15
6	8 0	4 0	4 16	9 35	6 41	5 27	6 33	6 31
11	7 55	4 5	Rises	9 13	6 36	4 57	6 41	8 36
16	7 50	4 10	7M 33	8 50	6 31	4 25	6 52	10 25
21	7 43	4 17	7 14	8 21	6 26	Rises	7 3	11 58
26	7 36	4 25	6 55	8 5	6 20	5M 54	7 11	13 10

FEBRUARY hath xxviii Days.

M D	☉ Dec. South
Last Quarter 3 Day, 23 min. past 9 at Night.	1 17° 7′
New Moon 11th, 40 min. after 4 Morn.	6 15 38
First Quarter the 19th, 3 min. before 9 Morn.	11 14 2
Full Moon the 26th, half past 2 Afternoon.	16 12 20
	21 10 34
	26 8 43

M D	W D	Sundays, Holidays, remarkable Days Length, Incr. Days, Terms, Fairs, &c.	☽ Rise and Sets	Moon South
1	S	Days increas'd 1 hour 23 min.	10 A 33	3 M 34
2	E	Sexagesima S. Purif. or Candlem. D.	11 50	4 25
3	M	Craft. Purif 3 Ret. *Axbridge* and *Bath*.	Morn.	5 16
4	Tu	*A new Candlemas Blast about this Time*	1 4	6 8
5	W	Agatha Sicil. V. and M. *Gravesend*, K.	2 13	7 0
6	Th	Day. 9 hours 28 min. long.	3 20	7 46
7	F	Night 14 hours 32 min. long.	4 21	8 48
8	S	*Bingham*, in the Vale of Belvoir, Not.	5 10	9 43
9	E	Quinq. Shrove Sunday.	5 50	10 3
10	M	Octab. Purif. 4 Ret. *Nantwich*, Ch.	6 25	11 2
11	Tu	Shrove Tuesday.	☽ Sets	0 A 1
12	W	Ash-Wednesday. 1st Day of Lent	6 A 35	0 51
13	Th	Old Candlem. D. *Bakewell*. *Doncaster*.	7 37	1 40
14	F	Valentine Bish. and M. *Bromley*,	8 41	2 2
15	S	Days increas'd 2 hours 17 min. [*Feint*	9 45	3
16	E	1 Sunday in Lent. Quadragesima.	10 46	3 48
17	M	*Weather now and to the end, very*	11 47	4 31
18	Tu	*Nun-Eaton*, Warwicksh.	Mon	5 14
19	W	Ember Week. *Beverley*, Yorksh.	0 48	6
20	Th	*much like the Weather we had*	1 49	6 51
21	F	*in Feb. in the Year* 1748-9 *Old Style.*	2 45	7 44
22	S	at *Oundle* in Northamp. *Norton* Oxf	3 39	8 35
23	E	2 Sunday in Lent. Reminiscere.	4 27	9 31
24	M	St. Matthias Ap. & M. *Godalming*	5 7	10 3
25	Tu	*Feversham*, Kent. [Surry,	5 46	11 3
26	W	*Oundle*, Northampt.	☽ Rise	Morn
27	Th	Days are now encreas'd 3 hours.	0 A 55	0 2
28	F	*Chesterfield*. Derbyshire.	8 14	1 2

M D	☉ Rises	☉ Sets	♄ Rises	♃ Rises	♂ Rises	♀ Rises	☿ Rises	Clocks fast
1	7h 26′	4h 35′	6 M 33	7 A 38	6 M 12	M 25	7 M 18	14 11
6	7 18	4 44	6 14	7 15	6 5	5	7 18	4 38
11	7 8	4 53	5 56	6 53	5 58	52	Sets.	14 46
16	6 59	5 2	5 39	6 30	5 50	43	A 10	14 36
21	6 49	5 12	5 21	6 7	5 4	35	5 44	14 5
26	6 39	5 22	5 3	5 45	5 3	28	6 22	13 19

MARCH hath xxxi Days.

M D	☉ Decl. South
Last Quarter the 5 Day, 13 min. past 6 Morn.	1 7 35
New Moon the 12th, at 10 at Night.	6 5 40
First Quarter the 21st, 26 min. past 2 Morn.	11 3 43
Full Moon the 28th, 23 min. before 1 Morn.	16 1 45
	21 0N 13
	26 2 12

1	S	David Archb. Min. v.	9 A	36	2 M	13
2	E	3 Sunday in Lent. Oculi.	10	54	3	10
3	M	*Pontefract*, Yorksh. *Stockport*, Chesh.	Morn.		4	5
4	Tu	*Melton Mowbray*, Leicestershire.	0	5	4	57
5	W	*Blandford*, Dorsetshire. [Eff.	1	14	5	52
6	Th	*Bourne*, Lin. *Lavenham*, Suf. *Walden*,	2	17	6	45
7	F	*Nottingham, Uppingham, Chip. Nort.*	3	10	7	40
8	S	Cyprian.	3	56	8	32
9	E	4 S. in Lent, or Midlent S. Lætare.	4	34	9	22
10	M	*March Weather, let the same be foul, fair*	5	4	10	7
11	Tu	Day 11 hours and half. [☉ Ecl. 12th.	5	34	10	54
12	W	Greg. *Culliford*, Devonsh. *Marden, K.*	☽ Sets		11	37
13	Th	*stormy or calm, &c. now and to the end.*	6 A	35	0 A	26
14	F	*Brimwelbanks*, Norf. *Northorp*, Flint.	7	38	1	16
15	S	*Oswestry*, Shropsh. [*Senoke*, Kent.	8	41	1	51
16	E	5 Sunday in Lent. Judica. [Wilts.	9	43	2	33
17	M	St Patr. *Hariff*, Hunt. *Malmsbury*,	10	44	3	18
18	Tu	*Loughboro'* Leic. *Nuneaton, Worksop*,	11	43	4	3
19	W	*Aboot's Bromley*, Staf. *Ruthin*, Denbysh	Morn.		4	49
20	Th	Cuthb. *Durh. Dolton*, D. ☉ in ♈ 10h.	0	40	5	40
21	F	Benedict. *Downes*, D. Equal D. & N.	1	35	6	29
22	S	in all the habitable parts of the Globe.	2	24	7	27
23	E	6 Sunday in Lent. Palm Sunday.	3	6	8	26
24	M	*Llanechemith* Caerm. *Shirley St.* War.	3	45	9	23
25	Tu	Annunc. Lady Day. Pr. EDWARD b.	4	22	10	19
26	W	*Gloucester.* St. *Albans.* (*Probus*, Corn.	4	53	11	13
27	Th	*Nottingh. Preston*, Lanc. *Woodbridge* Suf	5	25	Morn.	
28	F	GOOD FRI. our SAVIOUR's Cruci.	☽ Rises		0	7
29	S	*Stourbridge*, Worcestersh.	8 A	35	1	2
30	E	EASTER DAY. Our SAV. Resur.	9	55	1	57
31	M	Easter Monday. *Durham.* lasts 3 Days	11	11	2	5

M D	☉ Rises	☉ Sets	♄ Rises	♃ Rises	♂ Rises	♀ Rises	☿ Sets	Cl. fast
1	5h 34	5h 27	4 M 53	5 A 32	5 M 30	4 M 26	6 A 43	12 44
6	6 24	5 37	4 35	Sets	5 21	4 23	7 16	11 38
11	6 14	5 47	4 18	6 M 2	5 11	4 20	7 37	10 21
16	5 4	5 57	4 1	6 1	5 3	4 17	7 43	8 55
21	5 58	6 3	3 44	5 42	4 54	4 15	7 33	7 24
26	5 45	6 16	3 28	5 23	4 46	4 10	5 52	5 55

APRIL hath xxx Days.

M D	☉ Decl. South.
1	4° 32′
6	6 26
11	8 18
16	10 7
21	11 51
26	13 30

Last Quarter 3 Day, 25 min. past 4 Afternoon.
New Moon 11th, 43 min. after 3 Afternoon.
First Quarter 19th, 6 min. past 4 Afternoon.
Full Moon 26th, 13 min. after 9 in the Morn.

1	Tu	Easter Tu. All Fools Day. *Coventry.*	Morn.		3 M	51
2	W	*Lutterworth*, Leic. *Salisbury*, Wilts.	0	17	4	49
3	Th	*Chesterfield*, *Chichester*, *Northampton.*	1	14	5	41
4	F	St. Ambr. at *Rothbury* in Northum.	2	2	6	32
5	S	Old Lady D. *Huntingdon. Doncaster.*	2	42	7	27
6	E	1 Sunday after Easter. Low Sunday.	3	18	8	13
7	M	*Atherstone*, Warwicksh.	3	47	9	2
8	Tu	*Fine springing Weather, if not too cold.*	4	13	9	47
9	W	Days 13 hours 24 min. long.	4	37	10	29
10	Th	Days increas'd 5 hours 49 min.	4	59	11	9
11	F	*Newport-Pagnel*, Bucks.	☽ Sets		11	55
12	S	*Hickfield*, Hampshire.	7 A	44	0 A	37
13	E	2 Sunday after Easter.	8	45	1	22
14	M	*Ashbourn*, Derbysh. *Budworth*, Chesh.	9	44	2	6
15	Tu	☉ due E. 6 hours 35 min.	10	42	2	53
16	W	East. Term begins. *Dalton's-Marsh*,	11	38	3	40
17	Th	*Malmsbury*, Wilts. [Wilts	Morn.		4	31
18	F	*Cobham*, Surry. *Derby.*	0	27	5	23
19	S	*Castle-Town*, Dorset. *Winslow*, Bucks.	1	12	6	15
20	E	3 Sunday after Easter. Jubilate.	1	51	7	9
21	M	*Modbury*, Devonsh. *Rumney*, Kent.	2	28	8	5
22	Tu	*Gisborough*, Yorksh. *Shrewsbury.*	2	59	8	58
23	W	St. GEORGE. *Northampton.*	3	29	9	52
24	Th	*Aberforth*, Yorksh. *Cirencester*, Glou.	3	58	10	49
25	F	St. MARK Evang. *Axmouth*, Dev.	4	28	11	45
26	S	Prince WILLIAM born	☽ Rises		Morn.	
27	E	4 Sunday after Easter.	8 A	53	0	45
28	M	*Pilton*, Northamp. *Soham*, Cambr.	10	5	1	44
29	Tu	*Market-Harbro'* Leic. *Newchurch*, Lanc.	11	11	2	42
30	W	☉ rising Amplitude 25° 48′	Morn.		3	41

☽	☉ Rise.	☉ Sets	♄ Rise	♃ Sets	♂ Rises	♀ Rises	♅ Sets	Clock fast
1	5h 35′	6h 26	3M 8	5 M 0	4M 31	4 M 6	Rises 4M 5	4′ 17
6	5 25	☽ 36	2 50	4 41	4 20	4 0	4 2	47
11	5 15	☽ 46	2 32	4 22	4 8	3 54	4 43	1 20
16	5 6	☽ 55	2 14	4 3	3 56	3 48	4 33	Slow
21	4 56	7 5	1 56	3 45	3 44	3 42	4 22	1 10
26	4 47	7 14	1 38	3 36	3 32	3 37	4 13	2 12

MAY hath xxxi Days.

M D	☉ Decl. North.
1	15 4
6	16 32
11	17 52
16	19 6
21	20 11
26	21 56

Last Quarter 3d Day, half past 4 Morn.
New Moon 11th, a quarter past 8 in the Morn.
First Quarter 19th, at 2 in the Morn.
Full Moon 25th, 3 quarters past 4 Afternoon.

1	Th	St. PH. & JAC. Ap. & M. at *Totneſs*	0 M 6	4 M 35
2	F	(and *Wirkſworth*, Derbyſhire.	0 40	5 27
3	S	*Lancaſter. Weſtram*, K. *Bruton*, Som.	1 26	6 18
4	E	5 Sunday after Eaſt. Rogat. Sunday.	1 56	7 8
5	M	*Boſton*, Linc. *Monmouth. Lowth*, Linc.	2 22	7 51
6	Tu	*Wem*, Shropſh. *Brigſtock*, North.	2 47	8 36
7	W	Rogation Week. *Bath*, Som. *Leek*, Staf	3 10	9 18
8	Th	H. Thurſd. CHRIST's Aſcenſ. *MBoſw*	3 32	9 58
9	F	*Higham-Ferrers*. [*Kirby-Lonſdale*. W.	3 55	10 42
10	S	and *Manſfield*, Nott. on Holy Thurſd.	4 18	11 25
11	E	6 S. aft. Eaſter. Exaudi. [*Tuxford*.	☽ Sets	0 A 8
12	M	Eaſt. Ter. ends. Old May D. *Barnſley*.	8 A 42	0 55
13	Tu	*Elſlow*, Bedf. *Nun-Eaton*, Denbigh.	9 38	1 43
14	W	*Newark upon Trent*.	10 29	2 36
15	Th	*Bakewell*, Derb. *Chatham*, Kent.	11 13	3 25
16	F	*Fine ſeaſonable Weather, but Windy*.	11 55	4 20
17	S	*Stagſhawbank. Holbeach*, Lincolnſh.	Morn.	5 11
18	E	Whitſund. Def. of the Holy Ghoſt.	0 31	6 3
19	M	Whitmond. *Rothbury*, Northu. *Oundle*	1 3	6 58
20	Tu	Whit-Tueſday. *Durham* laſts 3 Days.	1 32	7 49
21	W	Ember Week. *Aſhburn. St. Tiddy*, Cor.	2 1	8 41
22	Th	*Abbots-Bromley*, Staf. *Greenſtreet*, Eſſ.	2 29	9 31
23	F	*Dorcheſter. Raſen*, Somerſetſh.	2 59	10 31
24	S	*Bath*, Som. *Merin*, Suff. *Llanvilling*.	3 32	11 27
25	E	Trinity Sunday.	☽ Riſes	Morn.
26	M	Craſt. Trin. 1 Return- *Watford*, in	8 A 52	0 26
27	Tu	Hertford, laſts 2 Days *Downington*	9 53	1 25
28	W	*Bala*, Merioneth. *Hadſtock*, Devonſh.	10 42	2 22
29	Th	K. CHAR. II. Nat. and Return.	11 24	3 18
30	F	Ter. beg *Baldock* Hert *Worksop* Not.	11 57	4 10
31	S	*Kettering*, North *Chipping-Nort*. Oxf.	Morn.	5 3

D	☉ Riſes	☉ Sets	♄ Riſes	♃ Sets	♂ Riſes	♀ Riſes	☿ Riſ.	Cl. ſlow.
1	4h 38	7 23	1 M 20	3 M 7	3 M 20	3 M 27	4 M 4	3′ 0″
6	4 30	7 31	1 1	2 47	3 8	3 18	3 59	3 35
11	4 22	7 39	0 43	2 27	2 55	3 9	3 49	3 56
16	4 14	7 47	0 23	2 8	2 42	3 0	3 45	4 2
21	4 6	7 55	11 A 59	1 49	2 28	2 51	3 39	3 55
26	4 0	8 0	11 38	1 30	2 14	2 42	3 38	3 33

JUNE hath xxx Days.

Last Quarter 1 Day, 40 min. past 6 Evening.
New Moon the 9th, 37 min. past 10 at Night.
First Quarter 17th, 47 min. past 8 Morn.
Full Moon 24th, 33 min. before 1 in the Morn.

M D	☉ Decl. North
1	22° 4′
6	22 40
11	23 7
16	23 23
21	23 29
26	23 26

1	E	1 Sunday after Trinity.	0	M	27	5 M	46
2	M	Oct Trin. 2 Ret. *Watford*, Hertford.	0	52		6	32
3	Tu	*Harsley-Green*, Lanc. [lasts 2 Days	1	14		7	11
4	W	Pr. of Wales b. *Daventry* N. *Newark*	1	36		7	57
5	Th	*Folkingham*, Linc. *St. Tossels*, Corn.	1	58		8	40
6	F	*Lenham*, Kent.	2	22		9	23
7	S	*Montgomery. Stow in Guillam*, Suff	2	49		10	6
8	E	2 Sunday after Trinity.	3	21		10	53
9	M	Quind. Trin. 3 Ret. *Fine Weather.*	☽	Sets		11	39
10	Tu	*Cranbrook*, Kent. *Hounslow*, Middlesex.	8	A	24	0 A	28
11	W	St. BARNABAS. *Grampound*, Corn.	9	12		1	19
12	Th	*Barlow*, Ess. *Hadlow*, K. *Haverford-*	9	55		2	13
13	F	*Kederminster*, Worcest. [*West*	10	30		3	4
14	S	*Bangor*, Cornwall.	11	4		3	54
15	E	3 Sunday after Trinity.	11	33		4	47
16	M	Tres Trin 4 Ret. *Wrexham*, Denb.	Morn.			5	38
17	Tu	*Bradford*. W. *Milton*, K. *S. Albans*	0	1		6	30
18	W	Ter. ends. *Ingleton*, Y. *Wellington*, Sh.	0	27		7	23
19	Th	*Fine good Weather now, and to the End.*	0	56		8	14
20	F	*Abingdon*, Ber. *Hereford*, *Colford*, Glou	1	26		9	9
21	S	☉ in ♋ at 9 in the Morn. Longest D	2	00		10	4
22	E	4 S. after Trin. K. GEO. II. Inaug	2	40		11	2
23	M	*Armington*, Devon. *Folkingham*, Lin.	3	30		11	58
24	Tu	Nat. of St. JOHN Bap. Midsum. *Camb*	☽	Rises		Morn.	
25	W	*Alconbury*, Hunt. on New Midsum. Day	9	A	14	0	48
26	Th	K. GEO. II. Proc. 1727. *Pershore*, W.	9	52		1	4
27	F	*Brackley*, Nor. *Boston*, L. *Burton*, Stat.	10	23		2	4
28	S	*Higham Ferrers*, N. *Stow-Green*, Dor.	10	50		3	36
29	E	5 S. aft. Trin. St. PETER Ap. & Mar.	11	14		4	13
30	M	*Mansfield*, Not. *Bath Bridgenorth*, Shr.	11	36		5	5

M D	☉ Rise	☉ Set.	♄ Rises	♃ Sets	♂ Rises	♀ Rises	♅ Sets	Cl. saw
1	3h 53	8h 7	11 A 13	1 M 7	1 M 58	2 M 32	ets	2 43
6	3 50	8 10	10 52	0 47	1 43	2 23	8 A 44	1 54
11	3 46	8 14	10 30	0 27	1 28	2 1	9 15	0 57
16	3 44	8 16	10 9	0 6	1 14	2 [illegible]	9 49	Fast.
21	3 4	8 17	9 48	11 A 42	1 1	2 [illegible]	9 48	0 57
26	3 44	8 16	9 26	11 22	0 47	1 51	9 47	2 [illegible]

JULY hath xxxi Days.

M D	☉ Decl. North.
Last Quarter 1 Day, 39 min. past 10 Morn.	1 23° 20′
New Moon 9th, 3 min. after 11 Morn.	6 22 45
First Quarter 16th, 47 min. past 1 Afternoon.	11 22 11
Full Moon 23d, 13 min past 9 Morn.	16 21 26
Last Quarter 31st, at 4 in the Morn.	21 20 33
	26 19 31

1	Tu	*Worksop*, N. *Thorney-Abby*, Ely. *Hithe*	11 A	58	5 M	50
2	W	*Heref. Brecknock, Uppingham, Sneath,*	Morn.		6	34
3	Th	*Shrewsbury. Dereham*, Norf. *Potton* B.	0	21	7	15
4	F	at *Hugshawbank, Chester, Lancaster.*	0	44	7	56
5	S	Old Midsummer Day. *Warwick, Leicester.*	1	14	8	41
6	E	6 Sunday after Trinity.	1	49	9	30
7	M	Tho. a Becket. *Chipping-Nort.* Ox	2	27	10	19
8	Tu	*Folkestone*, Kent. *Machynleth*, Montg	3	12	11	8
9	W	*Bromley*, Devonsh.	☽ Sets		11	58
10	Th	Old St. Pet. *Peterborough, M. Sorrel*, L	8 A	28	0 A	52
11	F	*Wem.* in Shropshire.	9	1	1	45
12	S	*Canterbury*, Kent. *Carshalton*, Surry	9	34	2	40
13	E	7 Sunday after Trinity.	10	1	3	31
14	M	*Woburn* Bed. Days decreas'd 25 min.	10	27	4	23
15	Tu	Swithin. *Porkdown*, Hants [Dorf	10	56	5	16
16	W	*Wincheser. Polstead*, Suf. *Woodhurst*,	11	25	6	4
17	Th	*Leek*, Staff. *Stevenage. Sutton*, Hants.	11	56	6	59
18	F	*Denbigh. Overton. Chipping Nort.* Ox.	Morn.		7	54
19	S	*Good Weather for the Harvest, if not too*	0	34	8	48
20	E	8 Sunday after Trinity. [*wet.*	1	17	9	41
21	M	*Alfreton*, D. *Swaffham*, N *Foulness*, K	2	9	10	41
22	Tu	Pr. CARO. MATIL. bo. *Colchester*, E	3	8	11	40
23	W	*Honiton, Daventry. Earl-Soham*, Suf	☽ Rises		Morn.	
24	Th	*Faringhay*, Kent.	8 A	15	0	31
25	F	St. JAM. Ap. & Mar. *Derby. Bristol*	8	46	1	22
26	S	*Leighton-Buz. Tamworth*, St. *Twiford*	9	12	2	12
27	E	9 Sunday after Trinity. [Berks	9	36	2	51
28	M	*Fotheringhay*, Northam. *Winchcomb*	10	0	3	43
29	Tu	Day 15 hours and half long. [Glo	10	24	4	2
30	W	Dog days begin. *Lynton*, Camb.	10	49	5	7
31	Th	*Barkway. Tenby*, Penm *Midhurst*, Suf	11	15	5	41

M D	☉ Rises	☉ Sets	♄ Rises	♃ Sets	♂ Rises	♀ Rises	☿ Sets	Cl. fast.
1	3h 46′	8 14	9 A 4	11 A 2	0 M 33	1 A 50	9 A 40	3 13
6	3 49	8 11	8 42	10 43	0 20	1 50	9 27	4 7
11	3 53	8 7	8 21	10 24	0 7	1 50	9 12	4 52
16	3 58	8 2	Sets	10 6	11 A 52	1 52	8 52	5 28
21	4 4	7 56	3 M 55	9 47	11 40	1 56	8 27	5 49
26	4 11	7 49	3 33	9 29	11 28	2 2	8 0	6 7

AUGUST hath xxxi Days.

M D	☉ Decl North
1	18° 6
6	16 47
11	15 21
16	13 49
21	12 12
26	10 30

New Moon 7 Day, 55 min. past 9 at Night.
First Quarter 14 Day, 24 min. past 6 Afternoon.
Full Moon 21st, half past 8 at Night.
Last Quarter 29th, 41 min. past 9 at Night.

1	F	Lammas-Day. Days short. 1 h. 13.	11 A	46	6 M	35
2	S	*Wincheſter*, Hampſh. *Maudlin Hill*, Yo.	Morn.		7	2
3	E	10 Sunday after Trinity.	0	22	8	
4	M	*Daventry* North. *Epſom* Sur. *Thurſk*, Y	1	5	8	5
5	Tu	*Doncaſter*. *Boſton*, *Stamford*, Linc.	1	55	9	4
6	W	*Audley*, Eſſ. *Chertſey*, Sur. *Caſtle Town*,	2	54	10	4
7	Th	*Falmouth*, Cornwall. [Monmouth.	☽ Sets		11	3
8	F	*Furſut*, Cornw. *Ruthin*, Denbighſh.	7 A	33	0 A	3
9	S	*Llanwrſt*, Denb. *Shirkin*, Middleſex.	8	5	1	2
10	E	11 Sunday after Trinity. [Devonſh.	8	32	2	1
11	M	*Flint*. *Banbury*, Ox. *Dunſtable*. *Exeter*,	9	0	3	1
12	Tu	*Newcaſtle upon Tyne*. *Loughborough* Lei.	9	30	4	
13	W	*Northampton*. *St. Eades*, Hert. *Stow*. Suf.	10	1	5	3
14	Th	*Fine ſeaſonable Weather for the Harveſt.*	10	36	5	5
15	F	*Oſweſtry*, Salop.	11	18	6	4
16	S	*Aſhburn*, Derb. *Donnington*, Linc. *Giſ-*	Morn.		7	3
17	E	12 Sund. aft. Trinity. [*borough*	0	8	8	3
18	M	Day 14 h. 24 min. long. decr. 2h. 1q.	1	2	9	3
19	Tu	*Dartington*, Devonſhire	2	1	10	2
20	W	☉ Amplitude North 16° 35′.	3	8	11	1
21	Th	*Oundle*, Northamp. *Lanſdown*, Som.	☽ Riſes		Morn.	
22	F	*Brecknell*, Berks. *Penkridge*, Staff.	7 A	19	0	
23	S	*Belford*, Northum. *Dinton*, Oxf.	7	43	0	5
24	E	13 S. after Trin. St. BARTH. Ap. & M.	8	8	1	3
25	M	*Llanerchemith*, Angleſ. *Morlidge*, Som.	8	31	2	2
26	Tu	*Huntingdon*. *Worceſter*. *Carliſle*, Cumb.	8	55	3	
27	W	*Coventry*, War. *Lambeth*. *Giſborough*,	9	22	3	5
28	Th	*Ripley*, Yorkſh.	9	52	4	3
29	F	*Oakham*, Rutl. *Stortford*, Hert. *Welch*	10	2	5	1
30	S	☉ due E. 6h. 30′. Alt. 12° 27′. [*pool*	11	4	6	
31	E	14 Sunday after Trinity.	11	49	6	4

M	D	☉ Riſes	☉ Sets	♄ Sets	♃ Sets	♂ Riſes	♀ Riſes	☿ Sets	Cl. faſt
1		4 20	7 40	3 M 7	9 A 7	11 A 16	2 M 11	7 A 24	5 49
6		4 27	7 33	2 46	8 49	11 5	2 22	Riſes	5 23
11		4 36	7 24	2 2	8 32	10 55	2 35	4 M 1	4 44
16		4 44	7 15	2 5	8 15	10 46	2 50	3 29	3 52
21		4 53	7 6	1 45	7 58	10 37	3 5	3 14	2 44
26		5 2	6 57	1 25	7 41	10 30	3 22	3 2	1 27

SEPTEMBER hath xxx Days.

M D	☉ Decl. North.
1	8° 21′
6	6 31
11	4 37
16	2 42
21	0 45
26	1 S 12

New Moon the 6 Day, at 8 in the Morn.
First Quarter 13th, 51 min. before 1 Morn.
Full Moon 20th, 47 min. past 10 Morn.
Last Quarter 28th, 4 min. past 3 Afternoon.

1	M	*North-moor*, Wilts.	Morn.	7 M	40
2	Tu	at *Ware*. *Richmond Rood*, North.	0 44	8	35
3	W	*Brecknock*, 6 Days. *Bridgestock*, Dev.	1 46	9	30
4	Th	*Brigstock*, North. *Bartholomew*, Lond.	2 53	10	24
5	F	*Botley*, H. *Chip*. *Nort*. O. *Kilnotton*, Cor.	4 5	11	18
6	S	*Probus*, Corn. ☉ Ecl. invis.	☽ Sets	0 A	10
7	E	15 Sund. after Trin. Dog Days end.	7 A 9	1	7
8	M	*Northampton Ormskirk*, L. *Wirksworth* D	7 38	2	1
9	Tu	*Stourbridge*, Worc. *Ashford*, K. *Devizes*.	8 10	2	56
10	W	*Still fine seasonable Weather for the Har-*	8 48	3	47
11	Th	*Tallowdown*, Dorsetshire. [*vest*.	9 26	4	45
12	F	*Bush Fair*, Mid. *Whitehaven*. *Wilton*	10 12	5	41
13	S	*Iron-Acton*, Gl. *Newton*. Lanc. *Tregony*,	11 3	6	38
14	E	16 Sunday after Trinity. [Corn.	Morn.	7	33
15	M	at *Durham*, lasts 3 Days. [Suf.	0 5	8	26
16	Tu	*Lutterworth*, Lei. *Newcastle*, Staf. *Wolpit*,	1 9	9	20
17	W	Emb. Week. *Masham*, Y, *Probus*, Cor.	2 16	10	8
18	Th	*Sturbridge* Cam. *Southwark*. *Wicks*, Ef.	3 24	10	58
19	F	*Northamp*. *Waltham*. *Worcester*. *Carlisle*.	4 28	11	4
20	S	*Manchester*, Lanc. ☽ Ecl. invis.	☽ Rises	Morn	
21	E	17 S. after Trin. St. MAT. Ap. Ev. & M.	6 A 44	0	2
22	M	☉ in ♎ 23 h. Equal Day and Night.	7 8	1	0
23	Tu	*Halkin*, Wilts. *Paincastle*, Radnor.	7 32	1	54
24	W	*Cheshunt*, H. *Kanymyneck Horhill*, H.	8 1	2	36
25	Th	*Baberry*, K. *Bakewell*. *Chesterfield*, Derb.	8 34	3	22
26	F	*Cliffe*, S. *Parthaethwy*, Ang. *Witham*, E.	9 10	4	6
27	S	*Clapham*, York. *Northall*, Middlesex.	9 53	4	53
28	E	18 Sunday after Trinity.	10 43	5	41
29	M	St. MICH. the Arch Ang. Michaelm. D.	11 38	6	32
30	Tu	at *Newcastle upon Tyne* the 29th.	Morn.	7	45

M D	☉ Rises	☉ Set	♄ Sets	♃ Sets	♂ Rises	♀ Rises	☿ Rises	W. flow.
1	5h 15	5h 45	1 M 2	7 A 21	10 A 20	3 M 41	3 M 50	0′ 19′
6	5 23	6 36	0 44	7 5	10 12	3 58	4 19	1 55
11	5 33	6 26	0 25	6 49	10 4	4 16	4 54	3 35
16	5 43	6 16	0 5	6 32	9 57	4 34	5 32	5 21
21	5 52	6 6	11 A 44	6 16	9 49	4 51	Sets	7 6
26	6 2	5 56	11 26	6 0	9 42	5 8	5 A 12	8 47

OCTOBER hath xxxi Days.

M D	☉ Decl. North
6	3° 9′
1	5 5
11	7 0
16	8 52
21	10 42
26	12 27

New Moon 5 Day, 47 min. past 5 Afternoon.
First Quarter 12th, 25 min. past 8 Morn.
Full Moon 20th, 18 min. past 5 Morn.
Last Quarter 28th, 9 min. after 7 Morn.

1	W	Remig. B. of Rhemes. Days shor. 5h.	0M	41	8M	18
2	Th	*Rothbury*, Northum. *Nottingham*, be	1	15	9	11
3	F	gins 2d, holds 8 Days. *Peterborough*,	2	4	10	7
4	S	*Kettering*, North. *Penkridge*, Staf. [*Derby*	4	27	11	1
5	E	19 Sunday after Trinity.	☽ Sets		11	56
6	M	*Hull*, York *Counteſs-Court*, Wilts.	6	A 18	0A	50
7	Tu	*Billericay*, Eſſex.	6	52	1	46
8	W	*Abingdon*, Ber. *Challock*, K. *Swanſey*.	7	30	2	45
9	Th	*Leiceſter*. *Mansfield*; on Old Mich. Day.	8	16	3	41
10	F	*Barmley Steyning*, Suſſ. OLD MICH.	9	8	4	39
11	S	Days decreas'd 6 ho. 4 minutes.	10	6	5	36
12	E	20 Sunday after Trinity.	11	9	6	30
13	M	*Devizes*. *Saliſbury*. *Sturmiſter*, Dorſ.	Morn.		7	25
14	Tu	*Buttonmoor*, Shrop. *Worksop*, Notting.	0	16	8	14
15	W	*Falſely*, Warwickſhire.	1	22	9	2
16	Th	*Boſworth*, Leic. *Hay*, Brecknockſh.	2	29	9	46
17	F	*Donnington*, Lin. *Lynn*, Norf. *Wenlock*.	3	36	10	31
18	S	St. LUKE the Evan. *Ardern*, Y. *Cank*.	4	42	11	14
19	E	21 S. after Trin. (Tres Mich. 1 Ret 20.	5	45	11	57
20	M	*Aſhborn*. *Blythe*. *Hereford*. *Colcheſter*.	☽ Rises		Morn.	
21	Tu	*Banbury*, Ox. *Gainſbro'* Li. *Rudgeley*, Sta.	6A	10	0	41
22	W	K. GEO. II. crown. *Newport Pagnell*.	6	40	1	22
23	Th	Ter. beg. *Broadclifts*, D. *Stockport*, Ch.	7	15	2	7
24	F	*Leighton-Buzz*. *Stow*, Glo. *Windſor*.	7	56	2	53
25	S	*Appletrewick*, Yorkſh. *Charing*, Kent.	8	41	3	41
26	E	22 S. aft. Trin. (Menſ. Mich. 2d. Ret.	9	35	4	30
27	M	*Affington*, Dev. *Buckingham*. *Warwick*	10	33	5	21
28	Tu	St. SIM. & St. JUDE. *Bingham*. *Totneſs*	11	38	6	12
29	W	*Aſkrigg*, York. *Bourne*, Lin. *Burton*, Sta	Morn.		7	6
30	Th	*Bridgenorth*. *Ely*. *Maidenhead*, Berks.	0	47	7	57
31	F	*Devizes*. *Settle*, Yorkſhire.	2	0	8	50

M	D	☉ Riſes	☉ Sets	♄ Sets	♃ Riſes	♂ Riſes	♀ Riſes	☿ Sets	Cl. ſlow.
1	6h	12′	5h 47	11 A 8	5M 30	9 A 34	5M 26	6 A 4	0′ 26″
6	6	22	5 37	10 51	5 17	9 25	5 44	5 56	11 55
11	6	32	5 27	10 33	5 5	9 15	6 1	5 50	13 14
16	6	42	5 17	10 15	4 52	9 5	6 19	5 41	14 24
21	6	5	5 8	9 57	4 40	8 54	6 37	5 37	15 19
26	7	1	4 58	9 39	4 27	8 41	6 56	5 29	15 54

NOVEMBER hath xxx Days.

M D	☉ Decl. South
1	14° 27′
6	15 0
11	17 27
16	18 46
21	19 57
26	20 59

New Moon 4 Day, 27 min. past 3 Morn.
First Quarter 10th, 23 min. past 8 at Night.
Full Moon 18th, 25 min. after 10 at Night.
Last Quarter 26th, a quarter past 9 at Night.

1	S	All Saints Day. *Rothbury*, Northum.	3 M	18	9 M	44
2	E	23 S. aft. Trin. Prs. of ORANGE b.	4	36	10	40
3	M	Craſt. An. 3 Ret. *Rochdale*, Lanc.	5	59	11	33
4	Tu	*Appleſhaw*, Hants.	☽ Sets		0 A	31
5	W	**Papists** Conſpiracy *Beverley*, York.	6 A	8	1	30
6	Th	*Helmſley. Middleham*, Y. *Newcaſtle*. Sta	6	58	2	29
7	F	*Keyley*. York. *Preſton*, Lan. laſts 4 Days.	7	57	3	29
8	S	*Hertford. Colcheſter. Aſhby*, Leic.	9	0	4	26
9	E	24 Sunday after Trinity.	10	6	5	22
10	M	K. GEO. II. born. [*Lenton.*	11	14	6	12
11	Tu	**Martin.** *Rocheſter. Stamford*, Linc.	Morn.		7	3
12	W	Craſt. Mart. 4 Ret. *Dunſtable*, Bedf.	0	22	7	48
13	Th	*Biſhop's-Caſtle*, Shro. *Darlington*, Dur.	1	28	8	32
14	F	*Brecknock*, and five Days following.	2	32	9	16
15	S	*Winterly Weather, dirty Roads, and ſhort*	3	36	9	58
16	E	25 Sunday after Trinity. [*Days*	4	39	10	39
17	M	*Launceſton*, Co. *Giſbro'* & *Sheffield*, Yor.	5	41	11	23
18	Tu	Octab. Mart. 5 Ret. *Andover*, Hants.	☽ Riſes		Morn.	
19	W	*Woodcot*, Oxf. *Yarme*, Yorkſh.	5 A	15	0	9
20	Th	*Blackney*, Glou. *Lyng*, Norf. [Norf.	5	53	0	54
21	F	*Garſtang*, L. *Lamport*, Som. *Loaden*,	6	35	1	40
22	S	*Wem*, Shropſh. *Brigſtock*, North. *York.*	7	25	2	28
23	E	26 Sunday after Trinity.	8	21	3	16
24	M	*More and more winterly; Increaſe of Col.*	9	22	4	3
25	Tu	Pr. WILL. HEN. born. Quin. Mar. 6 Ret.	10	28	4	53
26	W	*and Dirt; decreaſe of Days, Fuel and*	11	38	5	49
27	Th	*Littlebury*, Eſſex. [*Fodder.*	Morn.		6	40
28	F	Term ends. *Glouceſter. Linc. Northamp.*	0	50	7	29
29	S	*Aſhburn*, Der. *Somerton*, S. *Oſweſtry*, Sh	2	5	8	21
30	E	Adv. Sund. St. ANDR. Pr. Dow. of W. b.	3	23	9	14

M D	☉ Riſes	☉ Sets	♄ Sets	♃ Riſes	♂ Riſes	♀ Sets	☿ Sets	Cl. ſlow.
1	7h 12	4h 47	9 A 17	4 M 11	8 A 24	4 A 52	5 A 23	16′ 14″
6	7 21	4 38	8 58	3 57	8 9	4 49	5 15	16 8
11	7 28	4 31	8 40	3 42	7 52	4 43	5 7	15 43
16	7 37	4 22	8 21	3 27	7 32	4 39	4 53	14 54
21	7 4	4 15	8	3 11	7 10	4 34	4 30	13 45
26	7 51	4 9	7 44	2 55	6 47	4 31	Riſes	12 18

DECEMBER hath xxxi Days.

M D	☉ Decl. South
1	21° 51′
6	22 32
11	23 3
16	23 22
21	23 29
26	23 24

New Moon 3 Day, 24 min. past 1 Afternoon.
First Quarter 10th, 13 min. Afternoon.
Full Moon 18th, 6 min. past 5 at Night.
Last Quarter 26th, 54 min. after 8 Morn.

1	M	*Dulton*, Dev. *Heath*, Suf. *Rotheram*, Y.	4 M	42	10 M	8
2	Tu	*Hoxne*, Suffolk.	6	1	11	6
3	W	*Pennyfont*, Somersetshire.	☽ Sets		11	58
4	Th	*Atherstone*, Warw. *Thursk*, Yorksh.	5 A	26	1 A	0
5	F	*Colford*, Glouc. [*Dursley*, Glou.	6	31	2	1
6	S	Nicol. *Launceston*, Corn. *Ludlow*, Shr.	7	40	3	0
7	E	2 Sunday in Advent.	8	49	3	55
8	M	*Wells*. Som. *Boston*, Lin. *Malpas*, Chesh.	9	59	4	48
9	Tu	*Bradford*, Wilts.	11	8	5	38
10	W	*Newport*, Shropsh. *Swindon*, Wilts.	Morn.		6	23
11	Th	*Rochester*, K. *Preston*, Lan. *Cubley*, Der.	0	14	7	7
12	F	*Shrewsbury*, Shro. *Ross*, Here. *Bedal*, Y.	1	18	7	50
13	S	Lucy. *Folkingham*, Lin. *Leynard*, Glo.	2	21	8	30
14	E	3 Sunday in Advent.	3	23	9	11
15	M	*Atherstone*, Warw. *Namptwich*, Chesh.	4	24	9	50
16	T	*Pocklington*, Y. *Colgeth*. So. *Leskard*, Cor.	5	23	10	40
17	W	Emb. Week. *Exeter*, Dev. *Grantham*,	6	21	11	27
18	Th	*Spalding*, Linc. [Linc.	☽ Rises		Morn	
19	F	*Bedford*. *Northampton*. *Truro*, Cornw.	5	0	0	14
20	S	*Winterly Weather, and it will be as Cold*	6	3	1	1
21	E	4 Sund. in Advent. St. THOMAS Ap.	7	5	1	52
22	M	Shortest D. *Newport-Kearns*, Montg.	8	8	2	41
23	Tu	*as Christmas before the End of the Year,*	9	15	3	31
24	W	*But a good fire, &c. may prevent your being*	10	26	4	25
25	Th	CHRISTMAS DAY	11	37	5	12
26	F	St. STEPHEN Proto-Martyr.	Morn.		6	1
27	S	St. JOHN Evangelist.	0	49	6	51
28	E	1 S. after Christmas. Innocents or	2	4	7	44
29	M	(Herod's murthering the Infants.	3	23	8	39
30	Tu	*much hurt by inclemency of the Season;*	4	40	9	35
31	W	*with Care of yourself and Friends. &c*	5	54	10	34

M D	☉ Rises	☉ Sets	♄ Sets	♃ Rises	♂ Rises	♀ Sets	☿ Rises	Clock.
1	7h 57′	4h 3′	7 A 26	2 M 38	6 A 22	4 A 30	6 M 23	10′ 32′
6	8 1	3 59	7 6	2 20	5 50	4 31	6 0	8 28
11	8 5	3 55	6 47	2 2	5 20	4 34	6 2	6 14
16	8 7	3 53	6 27	1 44	4 47	4 39	6 16	3 50
21	8 8	3 52	6 8	1 26	4 15	4 47	6 27	1 20
26	8 7	3 53	5 49	1 7	3 42	4 56	6 44	1 Fast 11

A TABLE of all the Kings and Queens of *England* since the Conqueſt.

The Year of the Birth of each King and Queen; alſo the Year, Month, and Day, whereon they began to reign: beginning the Year the firſt Day of January. 1754.			The Length of each Reign.			The Years expired ſince each Reign began and ended.	
Names.	Born.	Began to Reign.	Y.	M.	D.	Beg.	End.
William Conq.	1027	1066 October 14	20	10	26	689	668
William Rufus	1057	1087 Septem. 9	12	10	24	668	655
Henry I.	1058	1100 Auguſt 2	35	4	0	655	620
Stephen	1105	1135 Decem. 1	18	10	24	620	601
Henry II.	1134	1154 October 25	34	8	11	601	566
Richard I.	1156	1189 July 6	9	9	0	566	556
John	1166	1199 April 6	17	6	13	556	539
Henry III.	1207	1216 October 19	56	1	0	539	483
Edward I.	1239	1272 Novem. 16	34	7	21	483	448
Edward II.	1284	1307 July 7	19	6	13	448	428
Edward III.	1312	1327 January 20	50	5	1	428	378
Richard II.	1366	1377 June 21	22	3	8	378	356
Henry IV.	1367	1399 Septem. 29	13	5	21	356	342
Henry V.	1389	1413 March 20	9	5	11	342	332
Henry VI.	1421	1422 Auguſt 31	38	6	4	333	293
Edward IV.	1442	1461 March 4	22	1	5	294	272
Edward V.	1471	1483 April 9	0	2	13	272	272
Richard III.	1443	1483 June 22	2	2	0	272	270
Henry VII.	1457	1485 Auguſt 22	23	8	0	260	246
Henry VIII.	1492	1509 April 22	37	9	6	246	208
Edward VI.	1537	1547 January 28	6	5	8	208	208
Mary I.	1516	1553 July 6	5	4	11	202	197
Elizabeth	1533	1558 Novem. 17	44	4	7	197	152
James I.	1566	1603 March 24	22	0	3	152	130
Charles I.	1600	1625 March 27	23	10	3	130	106
Charles II.	1630	1649 January 30	36	0	7	106	70
James II.	1633	1685 February 6	4	0	7	70	66
Mary II.	1662	1689 Feb. 13	5	10	15	66	61
William III.	1650		13	0	23	66	53
Anne	1665	1702 March 8	12	4	24	53	41
George I.	1660	1714 Auguſt 1	12	10	10	41	28
George II.	1683	1727 June 11	whom God preſerve.				

A Compendious TABLE of INTEREST,

Shewing the Interest of any Sum of Money, from a Million to a Pound; for any Number of Days, at any Rate of Interest.

N°.	l.	s.	d.	q.	N°.	l.	s.	d.	q.
1000000—	2739	14	6	0 ,99	1000—	2	14	9	2 ,14
900000—	2465	15	0	3 ,29	900—	2	9	3	3 ,12
800000—	2191	15	7	1 ,59	800—	2	3	10	0 ,11
700000—	1917	16	1	3 ,89	700—	1	18	4	1 ,10
600000—	1643	16	8	2 ,19	600—	1	12	10	2 ,80
500000—	1369	17	3	0 ,49	500—	1	7	5	3 ,70
400000—	1095	17	9	2 ,79	400—	1	1	11	0 ,50
300000—	821	18	4	1 ,09	300—	0	16	5	1 ,40
200000—	547	18	10	3 ,40	200—	0	10	11	2 ,30
100000—	273	19	5	1 ,70	100—	0	5	5	3 ,01
90000—	246	11	6	0 ,32	90—	0	4	11	0 ,71
80000—	219	3	6	0 ,96	80—	0	4	4	2 ,41
70000—	191	15	7	1 ,59	70—	0	3	10	0 ,11
60000—	164	7	8	0 ,22	60—	0	3	3	1 ,81
50000—	136	19	8	2 ,85	50—	0	2	8	3 ,51
40000—	109	11	9	1 ,48	40—	0	2	2	1 ,21
30000—	84	3	10	0 ,11	30—	0	1	7	0 ,90
20000—	54	15	10	2 ,74	20—	0	1	1	0 ,60
10000—	27	7	11	1 ,37	10—	0	0	6	2 ,30
9000—	24	13	1	3 ,23	9—	0	0	5	3 ,67
8000—	21	18	4	1 ,10	8—	0	0	5	1 ,40
7000—	19	3	6	2 ,96	7—	0	0	4	2 ,41
6000—	16	8	9	0 ,82	6—	0	0	3	3 ,76
5000—	13	13	11	2 ,58	5—	0	0	3	1 ,15
4000—	10	19	2	0 ,55	4—	0	0	2	2 ,52
3000—	8	4	4	2 ,41	3—	0	0	1	3 ,80
2000—	5	9	7	0 ,27	2—	0	0	1	1 ,26
1000—	2	14	9	2 ,14	1—	0	0	0	2 ,63

RULE.

Multiply the Sum by the Number of Days; and that Product by the Rate per Cent. Then cut off the two last Figures to the right Hand, and the rest you must find in the Table.

Example, What is the Interest of 100 l. for 365 Days at 5 per Cent

N°. of Days 365
multiply by 100
Product 36500
multiply by 5 Rate p. Cent.
1825100

Then in the Table

against 1000 is	2	14	9	2	,14
800	2	3	10	0	,11
20	0	1	1	0	,60
5	0	0	3	1	,15
Answ. 5	0	00			,00

THERE will be Four Eclipſes this Year (viz.) Two of each Luminary, tho' only one will be viſible to the Inhabitants of this Part of the Globe. They happen in the following Order.

The Firſt is of the SUN, *March* 12th, Beginning 45 min. paſt 9 at Night, conſequently inviſible.

The Second is of the MOON, *March* 27th; the apparent Times whereof, as calculated by Mr. *Tho. Allen* for the Meridian of *Spalding* in *Lincolnſhire*, from the genuine Tables of Dr. *Edmund Halley*, take as below.

Beginning at *Spalding*, 1755, *March* 27th, at	11h	16′	58″ P. M.
Middle	12	31	42
Ecliptic Oppoſition	12	38	20
End of the Eclipſe	13	46	26
Duration	2	29	28
Digits Eclipſed	6°	44′	10″

The Third is of the SUN, *Sept.* 6th, at about Half an Hour paſt 8 in the Morning, inviſible, becauſe of the Moon's South Latitude.

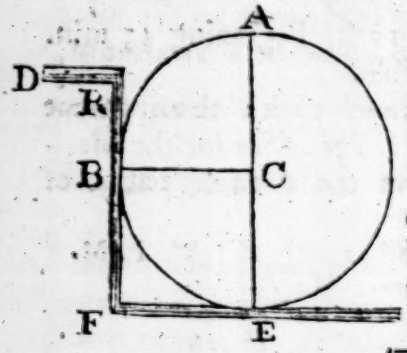
The Fourth and laſt is of the MOON, *Sept.* 20, at 38 min. paſt 10 in the Morning, and therefore inviſible to the Inhabitants of *Great Britain*. *Tho. Allen.*

The apparent Times of the above viſible Eclipſe, as ſent us by ſeveral of our Contributors, are as in the following Table.

March 27th, at Night.			Begin. h. m.	Midd. h. m.	End h. m.	Dur. h. m.	Dig. Ecl.
Mr Harland Widd for Whitby			11 21	12 38	1 55	2 34	7° 6′
Mr Edw. Greenſted for	London		11 24	12 40	1 57	2 33	6 58
	Wateringbury, Kent		11 26	12 42	1 59		
Mr James Hoggard for Peterborough			11 20	12 38	1 56	2 36	7 24
Mr Benj. Donn for	London		11 17	12 33	1 48	2 31	6 53
	Bideford		11 0	12 16	1 31		
Mr John Ramſay for	Morpeth		10 52	12 8	1 24	2 33	7 03
	Little Harle		10 51	12 7	1 23		
Mr Alex. Rowe by Leadbetter's Tables for	London		10 46	12 3	1 20	2 34	7 16
	Archangel	28th in Mor.	1 28	2 45	4 2		
	Jeruſalem		1 8	2 25	3 42		
	Liſbon		10 9	11 26	12 43		
	Penzance		10 24	11 41	12 58		
Mr Sam. Towndrow for	London		11 9	12 17	1 23	2 15	9 1
	Greenwich		11 9	12 17	1 28		
	Fulbeck, Lincſh.		11 6	12 13	1 20		
	Rome		12 1	1 9	2 15		
	Naples		12 9	1 17	2 23		
Mr Ro. Pecham from Flamſted's Tab.	London		11 21	12 40	1 58½	2 37	7 30
	Graveſend		11 22	12 41	1 59½		

Anſwers to the QUESTIONS in laſt Year's *Diary*.

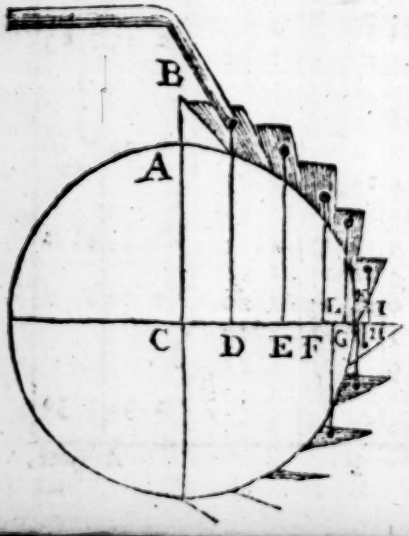
Queſtion 1, or 131. anſwer'd by Mr. *Tho. Garrard*.



PUT c = 22 Feet = RF the given Fall of the Water, and x = AC = BC the required Radius of the Wheel, then (becauſe the Velocities of falling Bodies are as the ſquare Roots of the Spaces deſcended) $\sqrt{c-x}$ will be as the Momenta or Force wherewith the Stream ſtrikes the Wheel at B, and ſeeing this Force acts at the End of the Laver BC, we have $x\sqrt{c-x}$ for the Power or Effect which the Water will have to turn the Wheel, therefore $\sqrt{cx^2-x^3}$, and conſequently cx^2-x^3 is a Maximum $\therefore 2cx\dot{x}-3x^2\dot{x}=0$; wherefore $2x=\frac{4c}{3}=29\frac{1}{3}$ Feet the Diameter of the Wheel.

The ſame anſwered by Mr. *Timothy Drury*.

The Velocity acquired by the Fall of Water will be the ſame as that of any other Body thro' the ſame Space; therefore putting a = 22, $c=16\frac{1}{12}$ Feet, and x'' = Time of Deſcent of the Water from the Trough to the Wheel, it will be as $1''^2 : c :: x^2 : cx^2$ = the Diſtance from the Trough to the Wheel, and $2cx$ = its Velocity, alſo $\frac{a-cx^2}{2}$ = the Wheel's Semidiameter, which multiply'd into its Velocity is $acx-c^2x^3$ = a Maximum, which put into Fluxions and reduced, gives $cx^2=\frac{1}{3}a$; hence the Diameter of the Wheel is $=\frac{2}{3}a=29\frac{1}{3}$ Feet. *W. W. R.*



Mr. *Wm Kingſton* ſolves it thus:

Put x = Radius of the Wheel, and ſuppoſing the Wheel to have 24 Buckets, Let a, b, c, d, e, f, g and h repreſent the Quantity of Water in each Bucket reſpectively; i, k, l, m, n, o, p and q the Diſtance of each Centre of Gravity in the Axis, from the Centre of the Wheel = CD, CE, CF, CG, CH, CI, CK and CL (for all the other Buckets will be empty) and then we have

$$\frac{ai+bk+cl+dm+en+fo+gp+hq}{x}\times x=$$

$x\,x =$ the Power of the Water on the Wheel, and putting $r = 22$ Feet, then $r - 2x =$ the Fall of the Water on the Wheel, and it's Velocity $= \sqrt{r - 2x}$, whence we have $ai + bk + cl + dm + en + of + gp + hq \times x\sqrt{r - 2x} =$ the joint Forces of the Fall and Wheel, which muſt be a Maximum, and in Fluxions is $\frac{r\dot{x} - 3x\dot{x}}{\sqrt{r - 2x}} = 0 \therefore r\dot{x} - 3x\dot{x} = 0$; Conſequently $x = \frac{r}{3} = 7\frac{1}{3}$ Feet, whence $2x = 14\frac{2}{3}$ Feet, the Diameter of the Wheel.

N. B. The Quantities of Water *a*, *b*, *c*, *&c.* with their reſpective Diſtances, CD, CE, CF, *&c.* of their Centres of Gravity from the Centre of the Wheel are eaſily calculated, from whence the Powers acting on any Wheel may be determin'd.

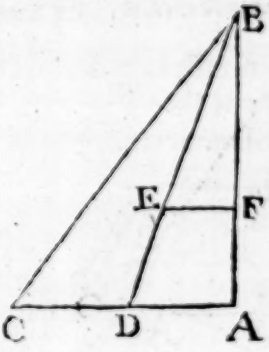
The ſame anſwer'd by Mr. *P. George.*

Put $2x =$ the Diameter of the Wheel, and $b = 22$ Feet; then $b - 2x =$ the Diſtance of the Fall of the Water on the Wheel, and $\sqrt{b - 2x} =$ the Velocity of the Water on the Wheel; then by the Nature of Mechanics $\sqrt{bx^2 - 2x^3} = m$, a Maximum, its Fluxion is $2bx\dot{x} - 6x^2\dot{x} = 0 \therefore 2x = \frac{2}{3}b = 14\frac{2}{3}$ Feet, the Diameter of the Wheel required.

This Queſtion was truly and ingeniouſly ſolv'd by Mr *Tho. Moſs*, Mr *William Enefer*, Mr *John Kirkby*, Mr *Benjamin Thearle*, Mr *Tho. Hare*, *Harland Widd*, and others.

(2) Queſtion 132. anſwer'd by Mr *William Bevil.*

Let $b = ,7854$, $2x =$ AC + CB, and $2y =$ CB − AC; then $x - y =$ AC; and ſince the Centre of Gravity is in the Line BD (biſecting the Baſe) at $\frac{2}{3}$ from B, we have as $a : \frac{x-y}{2} :: \frac{2}{3}a : \frac{x-y}{3} =$ FE. $\therefore \overline{2x + a} \times \overline{\frac{2x-2y}{3}}^2 \times b = \overline{2x-2y}^2 \times b \times \frac{a}{3}$ *per* Queſt. but by Diviſion $\overline{2x + a} \times \frac{1}{9} = \frac{a}{3}$ whence $x = a$, Then $a + \frac{a}{4} = 12,5 =$ BC the Hypothenuſe, and $a - \frac{a}{4} = 7,5 =$ AC the Baſe.



The ſame anſwer'd by Mr. *Steph. Metcalfe.*

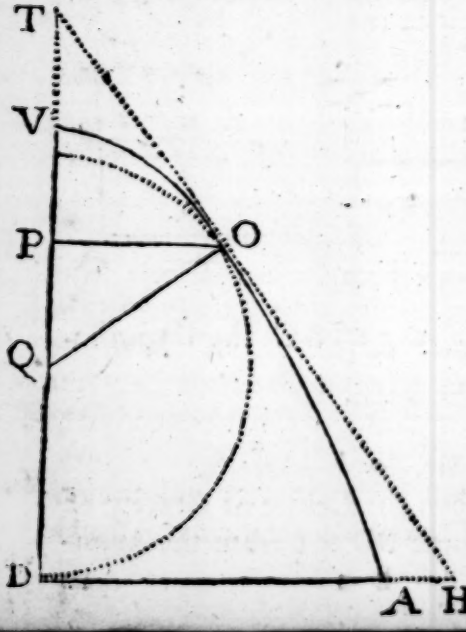
Let BD biſect the Baſe AC, then the Centre of Gravity of the Triangle will be in the ſaid Line BD at $\frac{2}{3}$ from the Angu-

lar Point B, which ſuppoſe at E; then EF will be equal the Radius of the Circle deſcribed by the Centre of Gravity in the Revolution of the Triangle. This being premiſed, Let x = BD, y = AD = DC, and c = ,7854. Then, *per* ſimilar Trigles $x : a :: \frac{2x}{3} : \frac{2a}{3}$ = FB, and $a : y :: \frac{2a}{3} : \frac{2y}{3}$ = EF $\therefore \frac{16cy^2}{9}$ = the Area of the Circle whoſe Rad. = FE, and $16cy^2$ = the Area of the Cone's Baſe; conſequently $\frac{16cay^2}{3}$ = it's Solidity; whence *per* Queſtion, $a + 2y + \sqrt{a^2 + 4y^2} \times \frac{16cy^2}{9} = \frac{16cay^2}{3} \therefore a + 2y + \sqrt{a^2 + 4y^2} = 3a$; ſolved $\frac{3a}{8} = y = 3,75$. Hence the Triangle's Baſe = 7,5.

The ſame anſwer'd by Mr *Sam. Bamfield.*

Put $3a$ = AB, $6x$ = AC, and b = ,7854; Then *per* Doctrine of the Centres of Gravity BF = $2a$ and EF = $2x$, and *per* Queſt. $144bax^2$ = the Cone's Solidity = $3a + 6x + \sqrt{36x^2 + 9a^2}$ (= AB + AC + BC, reſpectively) $\times 16bx^2$ = the Circle's Area, whoſe Radius is = EF, then *per* Reduction $x = \frac{3a}{8} = 1,25 \therefore 6x = 7,5$ = the Baſe AC.

This Queſtion was truly and ingeniouſly ſolv'd by Mr *Cha. Smith*, Mr *Tho. Garrard*, Mr *Paul Sharp*, Mr *John Nichols*, Mr *Richard Gibbons*, Mr *Joſ. Orchard*, Mr *P. George*, Mr *Wm Eneſer*, Mr *John Kirkby*, Mr *Benj. Thearle*, Mr *Zach. Goſkill*, Mr *Wm Kingſtone*, Mr *Rob. Peckham*, Mr *Tho. Hare*, Mr *Tho. Moſs*, Mr *Joſhua Holroyd*, and others; ſee the Catalogue at the End of the Book.



(3) Queſt. 133 anſwer'd by Mr *Charles Smith.*

Produce the Abſciſſa DV, to interſect the Tangent OT in the Point T, and to the Contact O, draw the Radius QO, and the Ordinate PO, then the right angled Triangles TOQ and TPO are ſimilar. Put x = TQ, b = 16 = QO = QD the Rad. of the Circle; then $x : b :: b : \frac{b^2}{x}$ = the Subnormal PQ $\therefore$ TP = $x - \frac{b^2}{x}$, and by the Principles of Conics

Conics $\frac{x^2-b^2}{2}$ = VP and $\frac{2b^2}{x}$ is the Parameter; ∴ (VP + PQ + QD =) the Abſciſſa VD = $\frac{x^2+2bx+b^2}{2x}$, and $\frac{2b^2}{x} \times \frac{\overline{x+b}^2}{2x} = \overline{AD}^2$; ∴ $\frac{bx+b^2}{x}$ = AD the Ordinate; hence $(\frac{2VD \times AD}{3} =) \frac{b \times \overline{x+b}^3}{3x^2}$ or $\frac{\overline{x+b}^3}{3x^2}$ is a Min^m, its Fluxion is $\frac{3\dot{x} \times \overline{x+b}^2 \times 3x^2 - 6x\dot{x} \times \overline{x+b}^3}{9x^4} = 0$ ∴ $3x^2 - 2x \times \overline{x+b} = 0$; and $x = 2b = 32$, PQ = 8, VD = 36, AD = 24, (the Curve AOV = 45,22111) and the Perimeter is = 138,44222 Feet.

The ſame anſwer'd by Mr *Zach. Gaſkill.*

Firſt, in order to find what Relation the Parabola bears to its circumſcribing (Iſoſceles or Equilateral) Triangle, Put TD = p, HD = b, and the Abſciſſa VD = x; and let O be the Tangent Point; Then will $p - x$ = VT (which *per* Property of the Curve) = VP, TP being the Subtangent: Then *per* ſimilar Triangles, as $p : b :: 2p - 2x$ (= TP) : $\frac{2pb - 2bx}{p}$ = PO, and as $p - x$ (= VP) : $\frac{\overline{2pb-2bx}^2}{p}$ :: x : $\frac{4pb^2x - 4b^2x^2}{p^2} = \overline{AD}^2$ ∴ $\sqrt{\frac{4pb^2x-4b^2x^2}{p^2}} \times x$ is a Maxim. in Fluxions $3px^2\dot{x} - 4x^3\dot{x} = 0$; Reduc'd $x = \frac{3}{4}p$ ∴ VP = $\frac{3}{4}p$ and OP = $\frac{1}{2}b$. Again, as $\frac{3}{4}p : \frac{1}{4}bb$ (= $\overline{OP}^2$) :: $\frac{3}{4}p : \frac{3}{4}b^2$ ∴ $\sqrt{\frac{3}{4}}b$ = AD. For as $\frac{1}{2}p \times b$ = the Area of the Triangle TDH, ſo is $\frac{1}{2}p$ (= $\frac{2}{3}x$) × $\sqrt{\frac{3}{4}}b$ = the Area of the Semi Parabola AVD. Therefore the Area of the greateſt inſcribed Parabola is to the Area of its circumſcribing (Equilateral or Iſoſceles) Triangle as $\sqrt{\frac{3}{4}}$ to 1, which is a conſtant Ratio.

But the leaſt Triangle that will circumſcribe a Circle is an equilateral one, therefore the Parabola muſt be inſcribed in the ſame; whence from the Data and the Properties above deſcribed, the Abſciſſa comes out 36, the Ordinate 24, (the Length of the Curve AOV = 45,2209) and conſequently the whole Perimeter = 138,4418.

Corollary. The Baſe of the leaſt Parabola that will circumſcribe any given Circle is equal to the Perpendicular Altitude of the leaſt circumſcribing Triangle.

The Propoſer, Mr. *Paul Sharp*, after a very curious Solution to this Queſtion, gives the following

Cor. The Axis, Semi-Ordinate and Parameter of the leaſt common Parabola that will circumſcribe any Circle are $\frac{3}{4}$, $\frac{9}{8}$, and $\frac{1}{2}$ of the ſaid Circle's Diameter.

This Queſtion was truly and methodically ſolved by Mr *Benj. Blakelock*, Mr *Tho. Garrard*, Mr *Joſeph Orchard*, Mr *William Bevil*, Mr *William Kingſton*, Mr *Samuel Bamfield*, Mr *Harland Widd*, *Tabularius*, Mr *Tho. Moſs*, and ſeveral others, as may be ſeen in the Catalogue.

(4) Queſtion 134 anſwered by Mr *Benj. Donn.*

Let $r = 5$ and $s = 6$; then by common Theorems the Curve of a Parabola whoſe Abſciſſa is 5 and Ordinate 6 is $=$ 8,1415, which put $= c$, and let $x =$ the Abſciſſa of the required Parabola; Then *per* ſimilar Figures, as $r : s :: x : \frac{sx}{r} =$ the required Ordinate, and as $r : c :: x : \frac{cx}{r} =$ the Curve required $\therefore x + \frac{sx}{r} + \frac{cx}{r} = p$ (putting $p =$ Perimeter) $=$ 80, conſequently $x = \frac{rp}{r+s+c} = 20{,}897$, and the Ordinate $= 25{,}076$; therefore the Area is $= 349{,}3376$ Square Chains.

Mr *Paul Sharp* ſolves it thus:

Put $y =$ the Semi-ordinate, then the Abſciſſa is $= \frac{5y}{6}$ and the Parameter $\frac{6y}{5}$ *per* Queſt. Then by the Doctrine of Fluxions we have this Equation $\frac{y\sqrt{136}}{12} + 0{,}69077 \times \text{Log.} \frac{10+\sqrt{136}}{6} + \frac{11y}{6} = 80$ *per* Queſt. whence $y = \frac{80}{3{,}19028} = 25{,}07616$ $\therefore \frac{5y}{6} = 20{,}8968$ the Abſciſſa; conſequently the Area $=$ 349,341 Square Chains.

Mr William Bevill *ſolves it by the general Property of ſimilar Figures*, thus:

Put the Abſciſſa $=$ Unity, and the Ordinate $= 1{,}2$ (which are in Proportion as 5 to 6) the Length of the Curve correſponding thereto is 1,628353, and the Area $=$,8; therefore the Perimeter of the aſſum'd Parabola is $= 3{,}828353$. Now ſay As $\overline{3{,}828353}^4 : {,}8 :: \overline{80}^2 : 349{,}33804$, the Area requir'd. Alſo the Abſciſſa $= 20{,}89671$ and Ordinate $= 25{,}076057$ to the Parabola requir'd.

(5) Queſt

(5) Queſt. 135. anſwer'd by Mr *Joſeph Orchard*.

Subſtitute $v+z$ for x, $v-z$ for y, and put $a=76864$, and $b=615104$; then the given Equations will be

	1	$2v^4-2z^4+2vz+2z^2=a.$
	2	$16v^4+16vz=b.$
$2\div 8$	3	$2v^4+2vz=\frac{1}{8}b.$
$3-1$	4	$2z^4-2z^2=\frac{1}{8}b-a.$
$4\div 2$	5	$z^4-z^2=\frac{\frac{1}{8}b-a}{2}=\frac{b-8a}{16}.$
5th Solv'd	6	$z=2$
	7	$v=14$ } whence $x=16$ and $y=12$.

W. W. R.

The ſame anſwered by Mr *Benjamin Blakelock*.

Let Half the Sum of the unknown Quantities x and y be denoted by s, and Half their Difference by d; then will the greater Quantity, which I find to be x, $=s+d$, and the leſſer $(y)=s-d$, which ſubſtituted inſtead of x and y, the two Equations will become $s^4+sd\times 16=615104$, and $2s^4+2sd+2d^2-2d^4=76864$; then dividing the Former by 16 and the Latter by 2, their Difference gives $d^4-d^2=12$, ſolved $d=2$, and s will be found $=14$; whence $x=16$ and $y=12$.

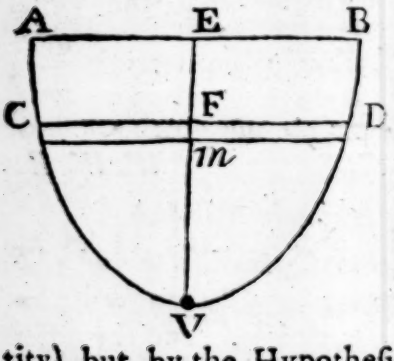
This Queſtion was ſolved in nearly the ſame Manner by Mr *Paul Sharp*, Mr *Charles Smith*, Mr *Edward Rogers*, *Engliſh Tom*, Mr *Tho. Garrard*, Mr *William Enefer*, and ſeveral others.

But Mr *Wm Kingſton* ſolves it thus:

Given $x^3y+y^3x+x^2-xy=76864$ and $4x^2-4y^2+\overline{x+y}^4=615104$. Firſt ſuppoſing $x=18$ and $y=10$, I find that I err 448 in the ſecond Equation too much, and in the firſt 400 too little: Again, taking $x=17$ and $y=11$, I err in the 2d Equat. 224, from whence $x=16$ and $y=12$.

(6) Queſt. 136. anſwered by Mr. *Tho. Moſs*, the Propoſer; *who (as well as ſeveral other of our Contributors) acquaints us, that ſince the Publication of our laſt* Diary *he has been informed, that this Queſtion is printed in the Appendix to* Stone's Fluxions, p. 202. Prob. xiv. *but at the ſame Time aſſures us, that he was not in the leaſt apprized of its being in Print any where, at the Time of his propoſing it; and as he has given a general Solution, when the Velocity of the deſcending Surface is as any Power of the Altitude of the ſaid Surface above the Orifice, we are in Hopes that our Contributors will not be diſpleas'd with the accidental reprinting of this Queſtion.*

And we flatter ourſelves, that Mr. Moſs *will, with the ſame Candour, paſs over our Inadvertency in adding to his Queſtion theſe Words,* And the Content, in Ale Gallons, when its Top Diameter is juſt 20 Inches. *For had we at the ſame Time (as was really intended) given the Depth of the Veſſel* = 16 *Inches, we preſume the Queſtion would not have been the worſe, but the better for ſuch an Addition.*



Let AE = a, EV = b, VF = x, and CF = y; Then the Area of the Surface CD will be = py^2 (p being = 3,1416) and the Fluxion of the Solid = $py^2\dot{x}$ ∴ the Time of the Surface deſcending the Diſtance Fm ($\dot{x}$) will be as $\frac{dpy^2\dot{x}}{\sqrt{x}}$ (d being a conſtant Quantity) but by the Hypotheſis the Time of the Surface deſcending the ſame Diſtance $\dot{x}$, will alſo be expreſſed by $\frac{\dot{x}}{x^n}$, ∴ $\frac{dpy^2\dot{x}}{\sqrt{x}} = \frac{\dot{x}}{x^n}$; or $\frac{dpy^2}{\sqrt{x}} = \frac{1}{x^n}$, hence $y^4 = \frac{x^{1-2n}}{d^2p^2}$: But when $x = b$ and $y = a$, then the Equation becomes $a^4 = \frac{b^{1-2n}}{d^2p^2}$; ∴ $d^2p^2 = \frac{b^{1-2n}}{a^4}$; and conſequently the general Equation in known Terms, will be $y^4 = \frac{x^{1-2n}}{b^{1-2n}} \times a^4$ or $y^4 = \frac{a^4x^{1-2n}}{b^{1-2n}}$; which in the Caſe propoſed, where $n = o$, becomes $y^4 = \frac{a^4x}{b}$, anſwering to the Biquadratic Parabola. But if $n = \frac{1}{2}$, or the Velocity of the deſcending Surface be as the Square Root of the Altitude; then the Equation will become $y^4 = a^4$, or $y = a$, which ſhews that the Figure in this Caſe will be a Cylinder: Laſtly, if $n = \frac{5}{2}$, then the Equation will be $y^4 = \frac{a^4 \times b^4}{x^4}$ or $yx = ab$; which is the known Equation of the Hyperbola, with reſpect to its Aſymptote.

Mr *Harland Widd* ſolves it thus:

Let a = ,7854 = the Area of Unity, d = AB = 20, b = VE = the Depth (which ſuppoſe = 16) x = VE any aſſumable Height (or Depth) and y = CD = its correſponding Diameter:

Diameter: Then $a\dot{d}^2\dot{x}$ = the Quantity of Water evacuated in the firſt Momentum of Time, and $a\dot{y}^2\dot{x}$ = the Quantity of Water evacuated in any other Momentum of Time. Now the Quantity of Water evacuated in any Momentum of Time, being as the Velocity, and that Velocity being as the Square Root of the Height of the Water, ſay as $\sqrt{h}$: $a\dot{d}^2\dot{x}$ :: $\sqrt{x}$: $a\dot{y}^2\dot{x}$; whence $\frac{d^4}{h}x = y^4$, which ſhews that the Veſſel muſt be a Biquadratic Paraboloid, whoſe Parameter is $\frac{d^4}{h}$; Then ſince $px = y^4$ we have $\dot{x} = \frac{4y^3\dot{y}}{p}$, and the Fluxion of the Content $= ay^2 \times \frac{4y^3\dot{y}}{p}$, whoſe Fluent gives the Solidity or Content $= ay^2 \times \frac{2}{3}x =$ (in the preſent Caſe) 11,88 Ale Gallons.

The ſame anſwer'd by Mr *William Kingſton*.

Since the Velocity of the Water running through the Hole at V is always as the Square Root of its Height; that is, when the Veſſel is full as $\sqrt{EV}$, and when the Water has deſcended to CD as $\sqrt{VF}$. Put $p = 3{,}1416$, BE $y = 10$, VE $= x$, $a =$ the Radius of the Hole at V (which being very ſmall to AB) V = the Velocity at V, and v = the Velocity in any other Part, being uniform by the Prob. Then $Va^2p = vp \times \overline{BE}^2$ $\therefore Va = v \times \overline{BE}^2$, conſequently $v = \frac{a^2V}{\overline{BE}^2}$. But by Sir *Iſaac Newton's Principia*, the Velocity V is always as $8{,}02773\ \sqrt{\frac{\overline{BE}^2 \times VE}{\overline{BE}^2 - a^2}}$; but a^2 being very ſmall in Proportion to $\overline{BE}^2$, may be rejected, and it becomes $8{,}02773\sqrt{EV} = V$, which being put for V, above, gives $v = \frac{8{,}02773\sqrt{VE}}{\overline{BE}^2}$; but 8,02773 being the ſame in all Parts of the Veſſel, may be rejected, and we have $\frac{\sqrt{VE}}{\overline{BE}^2}$ a general Expreſſion for the Velocity of the Surface, in all Parts as at CD, that is $v = \frac{\sqrt{VF}}{\sqrt{\overline{DF}^2}} = \frac{\sqrt{VE}}{\sqrt{\overline{BE}^2}}$; hence $\sqrt{VE} : \overline{BE}^2 :: \sqrt{VF} : \overline{DF}^2$; or as $VE : \overline{BE}^4 :: VF : \overline{DF}^4$; which ſhews the Veſſel to be

be a Biquadratic Paraboloid; ſuppoſing $\frac{\overline{DF}^4}{VF} = 1$; then will $y^4 = 10000$, and the Solidity $= \frac{2py^6}{3} = 2094395,102393 =$ 7426,933 Ale Gallons.

The ſame anſwered by Mr. *William Enefer*.

Let A E V be the generating Plane of the required Veſſel, and put $c = 3,1416$, $x =$ any variable Abſciſſa, and $y =$ its correſponding Semiordinate. Now it is evident, from the Nature of the Queſtion, that the Velocity of the iſſuing Water muſt be always in a conſtant Ratio with the Area of its upper Surface; but by the Laws of Hydroſtatics, the Velocity is always as the Square Root of the Heighth of the Water in the Veſſel; and by Menſuration the Areas are as the Squares of the Semiordinates: Conſequently $\sqrt{x} \propto y^2 \therefore x \propto y^4$, or (which is the ſame thing) $ax = y^4 =$ the Equation of the Curve ſought. Now $cy^2\dot{x}$ is the Fluxion of the Solid, but from above $x = \frac{y^4}{a}$, whence $\dot{x} = \frac{4y^3\dot{y}}{a}$; This wrote for x, in the above Expreſſion for the Fluxion of the Solid, it is $\frac{4cy^5\dot{y}}{a}$, whoſe Fluent is $\frac{2cy^6}{3a}$, which is a general Expreſſion for the Solidity of the Veſſel; whence the Content in Ale Gallons is $\frac{cy^6}{423a} = \frac{7426,933}{a}$, where *(a)* is a conſtant but indeterminate Quantity, and may be taken any Number at Pleaſure.

(7) Queſt. 137. anſwer'd by Mr *Thomas Allen*.

Let $a =$ the Sum of the Sides $= 60$, $x =$ the Baſe, and $y =$ the Perpendicular; Then $a - x - y =$ the Hypothenuſe; and *per* 47 E. 1. $x^2 + y^2 = a^2 - 2ax - 2ay + x^2 + 2xy + y^2$. Solved $x = \frac{a^2 - 2ay}{2a - 2y}$. Now $\frac{a^2 + 2ay - 4y^2}{2a - 2y} =$ the Price of the Field in Guineas, which (by the Nature of the Problem) muſt be a Minimum; which put into Fluxions and properly Reduced, we have $y = \frac{1}{4}a = 15$, and $x = \frac{1}{3}$ of $a = 20$. Conſequently the Area $= 150$ Chains, and the Price $= 50$ Guineas.

The ſame anſwer'd by *Tabularius*.

Given 60 the Sum of the Sides $= a$, and let $y =$ the Baſe, $x =$ the Perpendicular, and $a - x - y =$ the Hypoth. Then will

will $x^2+y^2=a^2-2ax+x^2-2ay+2xy+y^2$ ∴ $2ay-2xy=a^2-2ax$, and $y=\frac{a^2-2ax}{2a-2x}$, whence the Value in Guineas $=2x+\frac{a^2-2ax}{2a-2x}$, and the Area $=\frac{a^2x-2ax^2}{4\times a-x}$, ∴ $\frac{2x+\frac{a^2-2ax}{2\times a-x}}{\frac{a^2x-2ax^2}{4\times a-x}}=\frac{2}{a}\times\frac{a^2+2ax-4x^2}{ax-2x^2}$, which is a Maximum by the Queſt. in Fluxions $\overline{2a\dot{x}-8x\dot{x}}\times\overline{ax-2x^2}-\overline{a\dot{x}-4x\dot{x}}\times a^2+2ax-4x^2=0$, ∴ $4a^2x\dot{x}-a^3\dot{x}=0$; Conſeq. $x=\frac{a}{4}=15$, $y=\frac{a}{3}=20$, and the Hypothenuſe $=25$, the Area 150 Ch. and the Price 50 Guineas.

The ſame anſwer'd by Mr. *William Enefer*.

Put $60=a$, $x=$ Perpendicular, and $y=$ the Baſe; then will the Hypothenuſe be $=a-x-y$, and by the Conditions of the Queſt. $\frac{xy}{2x+y}$ muſt be a Max. and by 47 *E.* 1. $x^2+y^2=\overline{a-x-y}^2$, from which Equation we get $y=\frac{a^2-2ax}{2a-2x}$, which wrote for y. in the Expreſſion for the Maximum above, gives $\frac{a^2x-2ax^2}{2ax-4x^2+a^2}$ a Maximum, which put into Fluxions and properly Reduced, gives $x=\frac{a}{4}=15$, whence $y=20$, and $a-x-y=25$; Conſeq. the Area 150 Sq. Chains, and the Purchaſe Money 50 Guineas.

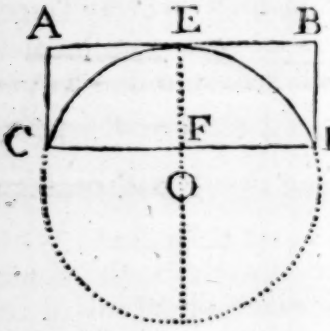
Mr *Smith*, Mr *Bamfield*, Mr *Donn*, Mr *Moſs*, Mr *Bevil*, Mr *Hare*, Mr *Garrard*, Mr *Sharp*, Mr *Rogers*, Mr *Orchard*, *Careleſs Jack*, Mr *Metcalfe*, Mr *Pricbes*, and ſeveral others, ſent us Solutions to this Queſtion; but as the Limits of our *Diary* will not permit us to inſert even a tenth Part of the Solutions we receive to almoſt every Queſtion, we hope our Contributors will generouſly excuſe us, ſo long as we endeavour to oblige as many of them as poſſible, and avoid the leaſt Degree of Partiality; tho' perhaps they may find many of the Solutions left out as neat and elegant as thoſe inſerted. We ſhall conclude this Queſtion with the following

Solution by Mr. *Timothy Drury*.

Suppoſe the Sides of a right-angled Triangle to be 3, 4, and 5 reſpectively, then (according to the Queſtion) the Purchaſer will have 6 Chains of Land for 10 Guineas: Again, let

let the Perpendicular be decreaſed and the Baſe increaſed by Unity, and you'll find that the Purchaſer will have only 5 Chains for 9 Guineas: Hence it is evident that the Gentleman will have the moſt Land in Proportion to his Money, when the Sides are in the above Ratio (of 3, 4, and 5); whence it only remains to find the Sides of a right-angled Triangle whoſe Sum is equal 60 Chains, which (by Proportion) will be very eaſily found to be 15, 20, and 25 Chains.

(8.) Queſt. 138. anſwered by Mr. *Steph. Metcalfe.*



Let $x = EF = AC = BD$, $a = 4$, $d = 3$, and $c = 0{,}626$. then $\frac{a}{x} =$ AB $=$ CD, and by two well known Theorems $\frac{x^2 + \frac{a^2}{4x^2}}{x} =$ the Diameter of the Circle, and $2\sqrt{c^2x^2 + \frac{a^2}{4x^2}} \times \frac{2x}{3} = d$, the Area of the Segment; Therefore $4x\sqrt{c^2x^2 + \frac{a^2}{4x^2}} = 3d$, and $16c^2x^4 + 4a^2 = 9d^2$, conſequently $16c^2x^4 = 9d^2 - 4a^2$; Solved $x = \sqrt[4]{\frac{9d^2 - 4a^2}{16c^2}} = 1{,}2832$, whence 3,1763 Feet is $=$ the Diameter of the Circle.

The ſame anſwer'd by Mr. *William Bevil.*

Let $a = 3$, $b = 4$, $n = 0{,}626$, and $x =$ the Chord CD $=$ AB, the Length of the Parallelogram, then $\frac{b}{x}$ equal its Breadth (EF,) or Verſed Sine, and *per* Rule in *Rob. Menſuration* for the Area of a Segment of a Circle we get $\sqrt{\frac{n^2b^2}{x^2} + \frac{x^2}{4}}^{\frac{1}{2}} \times \frac{4b}{3x} = a$; or $\sqrt{\frac{n^2b^2}{x^2} + \frac{x^2}{4}} \times \frac{16b^2}{9x^2} = a^2$; and by proper Reduction $x^4 = \frac{16n^2b^4}{9a^2 - 4b^2}$, whence $x = 3{,}117204$, and the Diameter of the Circle $= 3{,}1763$.

The ſame anſwer'd by Mr *Zach. Gaſkell.*

Let $x =$ the Segment's Height $=$ EF, $y =$ half its Baſe $=$ CF, and the Diameter $=$ Unity; then by the Property of the

the Circle $\sqrt{1-x\times x} = y$, which multiply'd into $\dot{x}$ (*viz.*) $\sqrt{x-xx}\,\dot{x}$ will be the Fluxion of half the Segment, whoſe Fluent or Area, when put into a Series will be $\frac{2}{3}x^{\frac{3}{2}} - \frac{1}{5}x^{\frac{5}{2}} - \frac{1}{28}x^{\frac{7}{2}} - \frac{1}{72}x^{\frac{9}{2}}$ &c. alſo $\sqrt{x-xx}\times x =$ $x^{\frac{3}{2}} - \frac{1}{2}x^{\frac{5}{2}} - \frac{1}{8}x^{\frac{7}{2}} - \frac{1}{16}x^{\frac{9}{2}}$ &c. will be the Area of half of the Parallelogram. This laſt Series x'ed by 3, and the former by 4 (according to the Condition of the Problem) are to be equal, which being done, 'tis plain that by Subſtraction (as the Indices and Signs of the ſought Quantity in every Term are homologous) one Side of the Equation will vaniſh, and a new one will ariſe, which when deducted accordingly will ſtand thus, $\frac{1}{3}x^{\frac{3}{2}} - \frac{7}{10}x^{\frac{5}{2}} - \frac{35}{56}x^{\frac{7}{2}} - \frac{19}{144}x^{\frac{9}{2}} - \frac{1285}{1408}x^{\frac{11}{2}}$ &c. $= 0$, when tranſpoſed and divided by $x^{\frac{3}{2}}$ will become $\frac{7}{10}x + \frac{35}{56}x^2 + \frac{19}{144}x^3 + \frac{1285}{1408}x^4$ &c. $= ,33333333$ &c. the Series continued to ten Terms converges, the Value of x, true to five Places of Figures, *viz.* when ſolved $=$ $,40455 = x$, whence the Area of the whole Segment $= 1,19135$ when Radius is $=$ Unity: Then ſay, As $1,19135 : 2^2 :: 3 : 10,0726$, whoſe ſquare Root $\sqrt{10,0726}$ $= 3,174 =$ the Diameter of the Circle.

This Queſtion was alſo anſwered by Mr *Cha. Smith*, *Engliſh Tom.* Mr *Bamfield*, Mr *D in*, Mr *Dyer*, Mr *Moſs*, Mr *Kingſtone*, Mr *Harland Widd*, *Tabularius*, Mr *Garrard*, Mr *Grimes*, Mr *Nicbols*, Mr *George*, Mr *Enefer*, Mr *Pritches*, Mr *Allen*, Mr *Wm Richardſon*, and others; ſee the Catalogue.

(9) Queſtion 139. anſwer'd by Mr *Tho. Garrard*.

Put $\left\{\begin{matrix} m \text{ and } n \\ p \text{ and } q \\ c \text{ and } d \end{matrix}\right\}$ for Sine and Coſine of the Latitude of $\left\{\begin{matrix} \textit{London} & 51^\circ\ 32' \\ \textit{York} & 54\ 00 \\ \textit{Edinburgh} & 56\ 07 \end{matrix}\right.$

and let v and $z =$ Sine and Coſine of the Sun's required Diſtance from the North Pole; $b =$ the Sine of 18°, the Sun's Depreſſion when the Twilight ends. Alſo let y, u, and, w repreſent the Coſines of the Sun's Diurnal Arch (including Twilight) at the Time required, at *London*, *York*, and *Edinburgh* reſpectively

Then by Spherical Trigonometry we have $\pm mz \pm nvy = -b, = \pm pz \pm qvu = \pm cz \pm dvw$, which will admit of three different Caſes.

For $\left\{\begin{matrix} 1^{\text{ſt}}, & y, v, \text{ or } w \text{ may be Affirmative, and } z \text{ Negative,} \\ 2^{\text{dly}}, & y, v, \text{ or } w \text{ may be Negative, and } z \text{ Negative,} \\ 3^{\text{dly}}, & y, v, \text{ or } w \text{ may be Negative, and } z \text{ Affirmative.} \end{matrix}\right.$

Caſe

Caſe 1ſt, $y = \frac{mz-b}{nv}$, $v = \frac{pz-b}{qv}$, and $w = \frac{cz-b}{dv}$; then by the Nature of the Queſtion we have

$$\left.\begin{matrix} dpz - db, \text{ greater than } qvz - qb \\ npz - bn, \text{ greater than } qmz - qb \end{matrix}\right\} \therefore \left\{\begin{matrix} z \text{ is leſs than } \frac{b \times \overline{q-d}}{\overline{qc-dp}} \\ z \text{ is greater than } \frac{b \times \overline{n-q}}{\overline{pn-qm}} \end{matrix}\right\} a$$

writing h, for $q-d$, = ,0302817, r, for $n-q$ = 0342739, a, for $qc-dp$ = the natural Sine of 2° 7′ (the Difference between the Latitudes of *York* and *Edinburgh*) and s, for $pn-qm$ = the Natural Sine of 2° 28′ (the Difference between the Latitude of *London* and *York*.

Then $\left\{\begin{matrix} z, \text{ is leſs than } \frac{bh}{a} = \text{the Natural Sine of } 14° 40' 34'' \\ z, \text{ is greater than } \frac{br}{s} = \text{the Natural Sine of } 14\ 14\ 46. \end{matrix}\right.$

And proceeding in like manner with Caſe the 2d, we get the ſame Concluſion.

But in Caſe 3d it comes $\left\{\begin{matrix} z, \text{ leſs than } \frac{bh}{-a} \\ z, \text{greater than } \frac{br}{-s} \end{matrix}\right\}$ where z is Negative as in the firſt and ſecond Caſes; which ſhews that the Sun's Declination muſt be South.

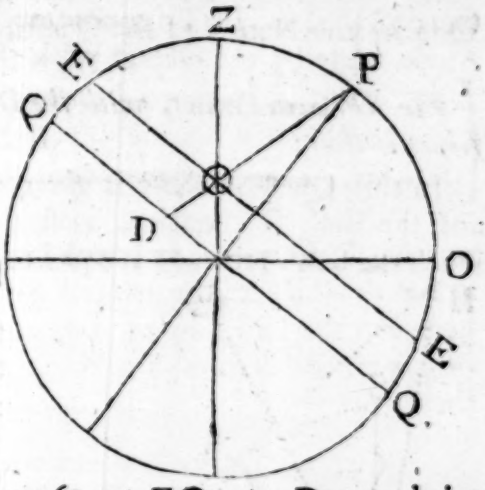
Alſo ſeeing mz, pz and cz are each of them leſs than b, 'tis evident that y, v and w, are all Negative.

And now it appears, that while the Sun's Declination South is greater than 14° 14′ 46″, and leſs than 14° 40′ 34″, the Nights (excluſive of Twilight) are longer at *York*, than they are either at *London* or *Edinburgh*; which in 1753 anſwer'd to *Feb.* the 9th, and *Oct.* 31ſt.

The ſame anſwer'd by Mr *Zach. Gaſkill.*

It is eaſy to conceive (without illuſtrating) that if the Sun was fix'd full Eaſt 18 Degrees (or any other Number) above the Horizon of *York*, the Middle Place (all the three Places being ſuppoſed to lye under the ſame Meridian, which if they do not, 'tis equally the ſame in this Caſe) his Altitude will there be greater than it will be at any other diſtant Place on either Side of it, in the ſame Meridian; Therefore his Continuance above 18 Degrees above the Horizon of *York* will be longer that Day, than above the Horizon of thoſe Places ſituate

tuate North and South of it. Which being premis'd, we have this eaſy *Calculation.*



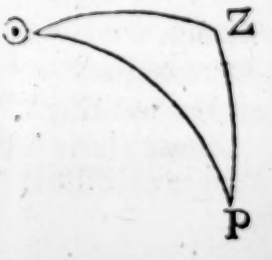
Let Z repreſent the Zenith of the Antipodes of *York*, P, the South Pole, QQ the Equator, HO the Horizon, EE a Parallel of the Sun's Southern Declination, and the Sun's Place. Then in the right angled Spherical Triangle ⊙ZP, there is given ZP = Complement of Latitude of *York* (which from *Gordon's Geograph. Grammar*) = 36° 40′. Z⊙ = 72 Degrees being the Comp. of 18 Degrees, to find P⊙, whoſe Complemᵗ by a common Problem in Spherics is = 14° 21′ 3″ = D⊙ the Southern Declin. anſwering to *Feb.* 9th and *Oct.* 31ſt, 1753.

Mr *Tho. Moſs*, Mr *Bamfield*, Mr *Donn*, Mr *Hartley* Sen. Mr *Kingſton*, Mr *Harland Widd*, and others, ſent us Solutions to this Queſtion.

10. Queſt. 140. anſwer'd by Mr. *Bamfield* the Propoſer.

This Queſtion (he ſays) *was not dated right, but ought to have been thus:* —— What was the Time in the Afternoon at *London* on the longeſt Day 1752, when the Sun's Azimuth from the South was equal his Altitude, an Object making an Angle with the Horizon of 54° did caſt its Shadow due Eaſt? Alſo what Angle muſt the Object make with the Meridian?

SOLUTION. In the Spherical Triangle put a = Sine of ZP = 38° 28′ = the Complement of Latitude, b = Coſine, and c = Sine of ⊙P = 66° 31′, d = Coſine, and x = Sine of the Sun's Altitude = ∠⊙ZP = his Azimuth (*per* Queſt.) then will $\sqrt{1-x^2}$ = the Sine of ⊙Z = Complem. of Altitude; Now ſay as $c : x :: a : \frac{ax}{c}$ = ∠⊙, then *per Simpſon's Fluxions*, Prob. xii. pag. 176. $c \times \sqrt{1-x^2} \times \sqrt{1-\frac{a^2x^2}{c^2}} + ax = b$;

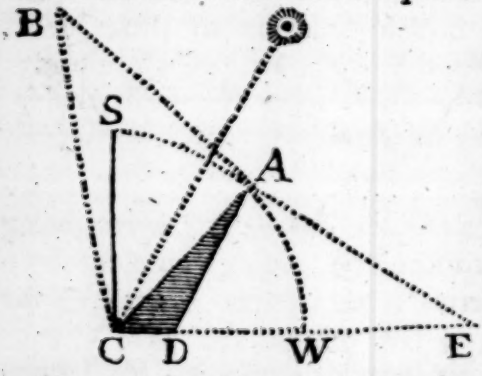


Reduced $c^2 - c^2x^2 - a^2x^2 + a^2x^4 = b^2 - 2bdx + d^2x^2$, from which Equation I find x = ,79796 *fere* = the Natural Sine of 52° 55′ 58″ = the Sun's Altitude = his Azimuth from the South; whence the required

quired Time was = 2^h 6′ 24″. And, by having the Sun's Altitude and Gnomon, I find the Length of the Shadow = 611098; then *per* Trigonometry I find that 51° 12′ = the Angle made by the Object with the Meridian.

Mr. William Enefer, *with the Data as per last Year's* Diary, *solves it thus:*

In this Question there is given the Latitude of the Place, and the Sun's Declination, to find the Time in the Afternoon when the Sun's Altitude is equal to his Azimuth from the West.



Which may be demonstrated thus. In the annexed Scheme let CSW represent the South-west Quarter of the Horizon, CB the given Object, CA its Direction with respect to the Meridian, and ACB the Angle of its Elevation above the Horizon: Also suppose C⊙ to be the Bearing or Azimuth of the Sun at the required Time, and let AD be parallel thereto, AE perpendicular to AD and equal to AB; Then if we conceive the Triangles ACB and ADE to be turned up (their Bases AC and AD remaining fix'd) till B and E coincide, and AB and AE become perpendicular to the Plane of this Paper (which represents the Horizon) it is evident that the Shadow of the extreme Points (A or B) of the Object, will fall upon the Point D, when the Sun's Altitude is equal to the Angle ADE, or his Azimuth from the West.

Hence in the Spherical Triangle ⊙PZ (see the last Page) we have given PZ = 38° 28′ = the Complement of Latitude, P⊙ = 66° 31′ = the Complement of the Sun's Declination, to find ⊙Z = the Complement of the Sun's Altitude = his Azimuth from the North or ∠Z.

Put $\left\{\begin{matrix} a \text{ and } b \\ m \text{ and } n \\ x \text{ and } y \end{matrix}\right\}$ for Sine and Cosine of the $\left\{\begin{matrix} \text{Sun's Declination} \\ \text{Lat. of the Place} \\ \text{Sun's Altitude;} \end{matrix}\right.$

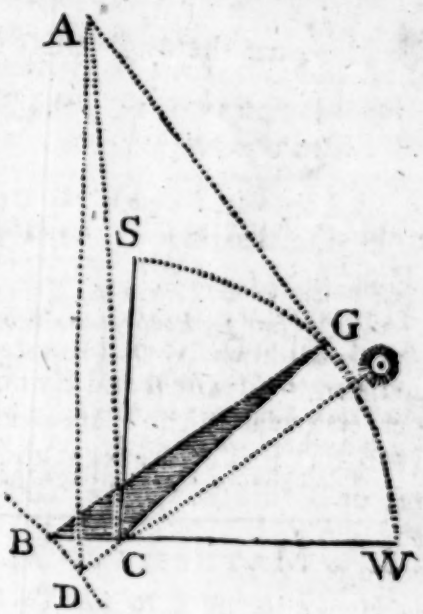
Then (from what has been said) y and $-x$ will be = the Sine and Cosine of the ∠Z, and by Spherics, $mx - nxy = a$, or (by writing $\sqrt{1-xx}$ for y) $mx - nx\sqrt{1-x^2} = a$, which properly reduced is $x^4 + \frac{m^2}{n^2}x^2 - x^2 - \frac{2am}{n^2}x - \frac{a^2}{n^2}$;

Solved

Solved $x = ,8586332$ = the Natural Sine of 59° 09′ 44″, whence the $\angle P = 16° 38′ 54″$, which converted into Time answers to $1^h\ 6^m\ 35^s\frac{6}{10}$ P. M. —— Put BC = the Length of the Object = Unity, s, and c = Sine and Cosine of 54 Degrees = the Angle of Elevation, Then in the Triangle ACE are given AE = s, AC = c, and the $\angle E\ (=y) = 30° 50′ 16″$, whence the $\angle ACE$ is found (*per* Trigonometry) = 44° 52′ 25″, whose Complement is 45° 07′ 35″ = SCA, the Angle which the Object must make with the Meridian.

Mr *Tho. Garrard* sent us a double Solution to this Quest. The first was nearly the same with Mr *Enefer's*, already inserted; the second was as follows (*Mr* Bamfield *having inform'd him of the Error in the Data.*)

In the Spherical Triangle ⊙PZ (see p. 31.) put n and m for the Sine and Cosine of ZP = 38° 28′, a and b for the Sine and Cosine of ⊙P = 66° 31′, and y and x for the Sine and Cosine of ⊙Z = the Complement of the Sun's Altitude, then will y and $-x$ be the Sine and Cosine of the $\angle Z$, and by Spherical Trigonometry $mx - my^2 = b$, or (by writing $1 - x^2$ for y^2) $x^2 + \frac{m}{n}x = \frac{b+n}{n}$, and by completing the Square &c. $x = \frac{m}{2n} \pm \sqrt{\frac{4bn - 3n^2 + 1}{4n^2}} = ,7977756$, the Natural Sine of 52° 55′ 05″$\frac{1}{2}$ = the Sun's Altitude and Azimuth required; hence $\frac{xy}{a}$ = the Sine of 31° 37′ 55″ = the Hour Angle from Noon.



Now let SGW represent the South-west Quarter of the Horizon, the Angle SC⊙ the Sun's Azimuth from the South, the right angled Triangle AC⊙ the given Gnomon, and let the Angle DA⊙ = (y) the Complement of the Sun's Altitude; then will D be the Point where the Shadow of the Top of the Gnomon A will fall, when the same stands perpendi-

 cular

cular and directly towards the Sun upon the Baſe C☉; Now if with the Radius C☉ and one Foot of the Compaſſes in the Line ☉C continued from C, the Arch BD be deſcribed paſſing through D, and from the Point of Interſection B, in the Line WC continued, the Line BG being drawn parallel to C☉; *Laſtly*, if from the Point of Interſection G, the Radius GC be drawn, it will be the Poſition of the Object or Gnomon with reſpect to the Meridian ſought.

CALCULATION. Let AC the Stile or Gnomon be called Radius, and for A☉ and C☉ put p, and q, reſpectively; *Then* in the right angled Triangle AD☉, as $x : p :: y : \frac{py}{x} = D☉ =$ BG; Now in the Oblique angled Triangle BGC, $q : y :: \frac{py}{x} : \frac{py^2}{qx} =$ the Angle BCG $= 38° 50' 46''$, whoſe Complement is $= 51° 9' 14''$, the Poſition of the Object with reſpect to the Meridian.

AS the chief Deſign of this DIARY *is to promote Art and Ingenuity, by annually publiſhing ſuch Contributions as we take to be moſt Uſeful and Improving (as far as the Room we have will permit) We hope our ingenious* Contributors *will excuſe us, if we deſire them, that (for the future) whatever they ſend for Publication, be* entirely New: *and that in their Solutions to the* Mathematical Queſtions *they will draw their* Schemes *perfect, and of a proper Size for the* DIARY: *And further, that they will bring out all their Equations in Numbers; as it will much facilitate the Labour of the* Authors, *in Collecting and Compiling the Work*, &c.

Nottingham, 13 Auguſt, 1754.

New MATHEMATICAL QUESTIONS, *to be anſwer'd in the next Year's* Diary.

(1) Queſtion 141 by Mr *Tho. Allen.*

GIVEN the Inclination of the Lunar Orbit, to the Ecliptic $= 5°$; Required the Place of the Moon in Longitude, and Latitude, when the Diſtance of her Centre, and likewiſe of her aſcending Node from the North Pole, are each, the Leaſt that can poſſibly happen at the ſame Time?

(2) Queſtion 142 by Mr *William Kingſton.*

The Convex Superficies of the common Parabolic-Conoid, will be *Leaſt*, when its Abſciſſa is $0{,}903084 \times \sqrt[3]{s}$; and its greateſt Ordinate $0{,}839605 \times \sqrt[3]{s}$; ($s$, being equal its Solidity) Quere the Demonſtration?

(3) Que-

(3) Queſtion 143 by Mr *Tho. Moſs.*

If a given *Right Line* be divided into two ſuch Parts, that the Product made by multiplying the leſſer Part into a given Power of the greater Part be a *Maximum:* I ſay that the two Parts of the divided Line muſt be in the Ratio of Unity to the ſaid given Exponent of the greater Part. Required the Demonſtration independent of Fluxions.

(4) Queſtion 144 by Mr *William Bevill.*

One Day, being in a certain Gentleman's ſpacious Garden, amongſt the reſt of the Curioſities there, I took particular Notice of a fine Summer-houſe and an Obeliſk, whoſe Summits were ornamented with two gilt Balls; their Diameters are 9 and 7 Feet reſpectively, and the perpendicular Heighth of each Centre from the Ground 25 $\frac{1}{2}$ Feet, alſo the true Diſtance from each other 100 Yards. Now as I walk'd in a right Line from one Building to the other, I obſerved, that the Surface of one Ball increaſed to my Eye, and that the other diminiſhed; which led me to think in what Part of that Line I might ſee the moſt Surface poſſible of thoſe two Balls, ſuppoſing the Ground truly horizontal, and the Height of my Eye accurately 5 $\frac{1}{2}$ Feet from its Surface?

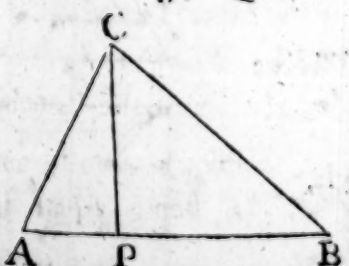
(5) Queſtion 145. by Mr *Paul Sharp.*

Suppoſe the Curve of a Parabola (whoſe Equation is $px^2 = y^3$) be $= 61,1$, and its bounding Ordinate $= 40$, Quere the Area of the greateſt inſcribed Parallelogram?

(6) Queſtion 146 by *Tabularius.*

How muſt a Ray of Light fall on a Parabolic concave Speculum (the Parameter of the generating Parabola being $= 8$,) ſo that, after two Reflections, the reflected Ray ſhall interſect the incident Ray in the Axis of the Parabola; making the Diſtance between the Points of Interſection and Incidence, equal to the Radius of Curvature at ſuch Point of Incidence?

(7) Queſtion 147. by Mr *Tho. Hare.*



In the Plain Triangle ABC there is given AC $=$ 80 Inches, CB $=$ 120 Inches, and the Perpendicular CP, let fall from the Vertical Angle C, divides the Baſe AB into Extream and Mean Proportion; Now the ſaid Triangle being the Baſe of

a Priſm whoſe Altitude (or Depth) is 10 Inches; 'Tis required to find the Time that it will empty itſelf in (when fill'd with gravitating Liquor) by a Hole made at the Bottom whoſe Diameter is an Inch and an Half?

(8) Queſtion 148 by *Tabularius*.

Required the Dimenſions of a Cone of the greateſt Solidity under a given convex Surface *(c)*? —— Or, of a given Solidity *(s)* under the leaſt convex Surface?

(9) Queſtion 149 by Mr *Tho. Moſs*.

The Rectangle of two Sides of a Triangle, including an Angle of 66° 29′, being given = 180; and alſo the Perpendicular falling from the ſaid Angle upon the oppoſite Side = 10, to determine *Geometrically* the Sides of the Triangle.

(10) Queſtion 150 by Mr *Benjamin Blakelock*.

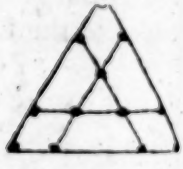
Required the ſuperficial Content of the greateſt Cylinder that can poſſibly be inſcribed in the Segment of a Globe, whoſe Solidity is = 19339,6896, and convex Superficies = 2827,44?

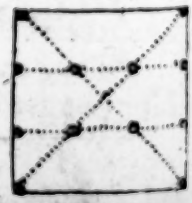
Anſwers to the ÆNIGMAS, ANAGRAM, REBUS, and PARADOX, in laſt Year's *Diary*.

1. A LIE.
2. A KISS.
3. The LETTER O.
4. A PAIR of SNUFFERS.
5. SIN.
6. A STANDISH.
7. The TITTLE over the LETTER I.
8. The GOUT.

Anagram, NORTH.
Rebus, An HUSBAND.

The PARADOX admits of various Anſwers, ſome of which ſee in the Marginal Schemes.





To Mr. *Dyke*, the Propoſer, by Mr. *J. Lewin*.

Ingenious Bard, * *Thus* Plant Twelve Trees,
There doubtleſs will appear
Six Rows, containing Four in each,
As was requir'd laſt Year.

Mr *D. Davis*, Writing-maſter, anſwers the laſt Year's *Ænigma's*, in the School-maſter's Advice to his Scholar.

Dear Sam, If you would happy be,
Pray take theſe uſeful Hints from me.
Begin and end each Day with Pray'r;
Be this your firſt, your conſtant Care.
And when you know your Parents Will,
With Cheerfulneſs obey it ſtill;
For if obedient you are found,
With kind SALUTES it will be crown'd. 2.
Whatever you tranſact, you muſt
(Ev'n to a TITTLE) ſtill be juſt. 7.
From SIN, as from a Serpent fly, 5.
And then you'll always dread a LIE. 1.
Your Time, more than a Jewel, prize,
And then you early will be wiſe.
Let Books, and Pens, and INKHORNS ſhare 6.
(Alternately) your Time and Care.
To Temp'rance have a great Regard,
Eat not too much, nor drink too hard:
Live regular your Life throughout,
And then (perhaps) you'll 'ſcape the GOUT. 8.
Beware (O *Sam!*) how you engage 3.
In the Diverſions of the Age;
Rather be ſingular and chaſte,
Than run into the preſent Taſte;
Where SNUFFERS are in moſt Requeſt, 4.
When ſober People are at Reſt.
Dear Youth, If by theſe Hints you ſteer,
You'll ſmoothly paſs from Year to Year;
You'll happy be in Life and Death:
And when you do reſign your Breath,
You'll to the bliſsful Regions riſe ——
Angels will waft you to the Skies.

All the *Ænigmas* and *Rebus* anſwer'd by Mr *John Taylor*.

A LIE, Sirs, and SIN, are to each near of kin, 1, 5.
As alſo an I to a TITTLE; 7.
Tho' the SNUFFERS lack O, and the STANDISH alſo, 4, 3, 6.
They're uſeful to *Great* and to *Little*.
Miſs (bigger or leſs) would a HUSBAND poſſeſs, *Rebus*.
When *more* than a *Dozen*, no doubt,

To Dally and Kiss; but beware, pretty *Miss*, 2.
Of one who's much teaz'd with the Gout, 8.

All the *Ænigmas*, *Anagram*, and *Rebus* answered by Mr *Samuel Moore*.

Since I possess'd my *Juliet's* blooming Charms,
And clasp'd the lovely Fair One in my Arms;
Since first that beauteous Maid, with Air divine,
Call'd me her Husband, and her Charms were mine: *Rebus.*
With Happiness each circling Hour I meet,
I Lie to say my Joy is not complete. 1.
From her dear *Lips* to steal a balmy Kiss, 2.
Is Joy immense, nay 'tis immortal Bliss!
O *Juliet*, to thy Charms if false I* prove, 3 and 7*
Or ever slight thy pure unspotted Love,
May I for such a Sin, be banish'd hence, 5.
May Gouty Pains be my sad Recompence; 8.
To some inhospitable Northern Shore *Anagram.*
Let me retire, and see my Fair no more:
There, let no Pen, or Stand, my Woes impart, 6.
No friendly Letter move my *Juliet's* Heart;
But may just Fate, for such black Perfidy,
Snuff short my Life, and let your *Romeo* die. 4.

The same answer'd by Mr *Thomas Allen*.

Must I * to *Flavia* bid Adieu, [*Alluding to the Title*
Abandon'd to Despair; [*over the* I, 7.
Those Charms I swear no more to view,
I Lie — I can't forbear. 1.
In Bliss we spent last Midnight Shade,
Nor Kiss'd by Candle-light; 2.
No Need had we of Snuffers Aid, 4.
Nor Stand, nor Pen to write. 6.
If ever *Nymph* from distant-Plains,
O'er my fond Heart prevails; 8.
May I be rack'd with Gouty Pains,
Or froze with Northern Gales. *Anagram.*
O Perfidy! that Sin to Love, 3 and 5.
Let it be banish'd hence;
Should *Flavia* my Requests approve,
Her Husband I'll commence. *Rebus.*

All

All the *Ænigmas*, *Anagr.* and *Rebus* answ. by Mr *Rich. Gibbons*.

A FALSHOOD, KISS, and Letter O, 1, 2, 3.
A HUSBAND, SNUFFERS, SIN, also, *Reb.* 4, 5.
A STANDISH, TITTLE, and the GOUT, 6, 7, 8.
Find *Riddles* and the *Rebus* out:
As sure as NORTH from *Thorn* lays claim *Anagr.*
To fair *Clarinda's* Maiden Name.

All the *Ænigmas*, *Anagram*, *Rebus*, and *Paradox* answer'd by Mr *Sam. Hammond*, of *Nottingham*.

I think (pray excuse me if any I miss)
First *Riddle*'s a LIE, and the second's a KISS;
Third O, SNUFFERS fourth, fifth is SIN, sixth a STANDISH,
Seventh TITTLE, eighth GOUT, which the Great fills with [Anguish.
I think, too, the *Anagram*, *Paradox*, *Rebus*,
Will each of them *properly* answered be thus;
The *Anagram*'s NORTH, *Paradox* TWO TRIANGLES
Plac'd (as when a HUSBAND with scolding Wife wrangles)
Each *crossing* the other, like those in the Margin *, [see p. 36]
Which save me the Trouble of *further* enlarging.

All the *Ænigmas*, *Anagr.* and *Rebus* answer'd by Mr *Tho. Royle*.

To solve your *Ænigmas* I'll venture to try,
The third I call O, second KISS, first a LIE,
Fourth SNUFFERS, fifth SIN, seventh TITTLE, eighth GOUT,
And sixth is a STANDISH: But very much doubt
Miss NORTH for a HUSBAND till Summer must stay,
For her *Name* will in *Winter* fright Lovers away.

They were likewise answer'd in Verse by *Careless Jack*, *John Fern*, *Molly Webster*, Mr *Geo. Watson*, Mr *Timothy Drury*, Mr *John Northouck*, Mr *Tho. Love*, Miss *Polly Bright*, *Obim Widd*, Mr *William Heaford*, Mr *John Ramsey*, Mr *William Richardson*, Miss *Nancy Poole*, Miss *Sophia*, Mr *Rob. Dalton*, Mr *George Butler*, Mr *John Chester*, Mr *Sam. Hodgkin*, Mr *Christ. Mason*, Mr *Harland Widd*, Mr *Rob. Marsh*, Mr *Will. Swift*, Mr *Samuel Handford*, and several Others; see the Catalogue at the End of the *Diary*.

New Ænigmas to be answer'd in next Year's Diary.

(1) Ænigma 97. by Mr *Christopher Mason*.

A Slave of Slaves my *Fortune*'s doom'd to be;
Fortune, said I? why, *Fortune* waits on me.
But first let me describe my lowly Birth,
For I'm not formed like the Sons of Earth;

Then I'll deſcribe the many Feats I've done,
How I've been drub'd, how many I've made run.
But to the firſt — My Heart is always light
Altho' my Sides are drub'd with Force and Slight.
The nervous Coat which circumſcribes my Heart,
From Tendons drawn, by Induſtry and Art.
No Creature has its Ribs ſo ſtrangely plac'd,
As mine; for I'm all Belly and no Waiſt;
And they ſtand perpendicular to my Heart,
With Nerves ſo interwove, they ne'er can ſtart.
My convex Ruſſet Coat, when rightly made,
Is from the Outſide of ſome founder'd Jade.
Now for my Feats — Stand off and clear the Way,
Then may you judge the better of my Play;
In boundleſs *Aether* oft my Journey take,
Oft on the verdant Glebe my Progreſs make;
For Time and Chance doth happen unto all,
Sometimes aloft I riſe, now quickly fall.
I ſerve two Maſters, who with eager Force
Start me full Speed along the beaten Courſe.
Two Ports are rais'd upon the neighb'ring Land,
There two Herculean Gladiators ſtand;
With Arms uplift, and brandiſh'd Club, each ſtrides
To guard his Port, and bang my turgid Sides.
With Courier's Speed, from Port to Port, I'm ſent,
Whilſt Numbers watch with Care to know th' Event.
When right directed, I do ſtorm the Port,
Down, down drops Club, and Courage all amort.
Another Champion does forthwith prepare,
Struts o'er the Plain, that he may take his Share;
With Eyes well fix'd, his Club well pois'd, he ſtands,
Thwacks my dull Sides, ſends me o'er diſtant Lands.
Then helter ſkelter, I am hard purſu'd,
Whilſt loud Huzza's are echoing from the Crowd;
And Turn for Turn the two *Herculeans* fly,
And Port for Port, till I their Coaſt come nigh.
Thus on it fares, till I have foil'd the Field,
The Champions weary, and to me muſt yield:
My Sides well beat, I bid you now Farewel,
The Evidence ſum up, the Secret tell.

(2) Ænigma 98. by Mr *Joſeph Hartley*.

Obvious to all, I ſport on ev'ry Plain,
Taſteleſs of Joy, inſenſible of Pain: My

My wondrous Stature oftentimes is ſeen
To cover Lands, and reach from Green to Green.
Prodigious Space I fill —— yet other Objects may
Poſſeſs the ſame, not moving me away.
All other Creatures from their Birth enlarge,
And grow till Nature's finiſhed her Charge;
But I, moſt ſtrange, from my Conception waſte,
Till Life's half done, and half my Days are paſt.
Then from my Noon, as others from their Morn,
I grow again, until I reach my Urn.
No Particles my wondrous Corps compoſe,
Yet 'tis from Subſtance that my Birth aroſe.
No Intellects can my Exiſtence own,
Yet I, by Inſtinct move and go alone.
Amphibious is my Nature, oft I play,
And mock the ſporting Fiſhes in the Sea;
Upon the Land with ev'ry Object be,
Graze with the Kine, and with the Fair drink Tea;
With op'ning Dogs the circling Chace renew,
Fly with the Hare, and with the Hounds purſue.
Yet *Sol* ne'er ſaw me in his bright Array,
Nor ſilver *Luna* from her azure Way;
Tho' you behold me twenty Times a Day.
From Light I fly, as from a deadly Foe,
Yet can in Darkneſs no Exiſtence know.
But further if I ſhould myſelf explain,
You would with too much Eaſe find out my Name.

(3) Ænigma 99. by Mr *Anthony Moor*.

Attend, ye *Bards!* whom Love of Wiſdom fires,
Whom *Phœbus* favours, or the *Muſe* inſpires!
Know when *Jehovah* form'd the human Frame,
And *All* from his Almighty *Fiat* came;
Me he form'd not, for I was never known
To have Exiſtence ſince the World begun;
Nor ſhall exiſt till Nature fails, and all,
Earth, Sea, and Skies, ſhall into Ruin fall.
But ſtrange! tho' to no Being I pretend,
Ten thouſand weighty Things on me depend;
Affairs of Kingdoms, and Intrigues of State,
On me with Doubt and ſtrong Impatience wait:
Nay, I am honour'd, in ſo high Degree,
Half the World's Buſ'neſs is referr'd to me.

Of

Of all the various Ills that Men endure,
I'm thought the cheapeſt, and moſt ſov'reign Cure,
The Hope of the *Diſtreſs'd*, the *ſick* Man's Health,
The *Captive's* Freedom, and the *Beggar's* Wealth.
An honeſt Flatterer I am, for None
Flatter th' unhappy Man, but I alone.
With you I never am, but always near,
Some raiſe with Hope, and ſome depreſs with Fear.
Half of their Joys, the *Sons of Folly* know,
Derive from me the Fountain whence they flow:
On me Mankind their Happineſs erect,
And flatt'ring Scenes of Bliſs in vain expect.
For me when Pleaſure prompts or Love perſuades,
Young *Miſſes* long, and antiquated *Maids*;
And *Poets* too, and *Heroes* in their turn,
With equal Ardour and Impatience burn.
For me young *Damon* ſighs, till *Delia's* Charms
Glad the fond Youth, and fill his circling Arms:
Deſpairing Lovers too my Influence feel,
Who ſooth their Anguiſh, or their Paſſions heal.
But truſt me not — Tho' thus the *Syren* ſmiles,
With Face angelic, ſhun her flatt'ring Wiles!
Know I'm by Nature falſe, a Lie, a Cheat,
Full too of Guile, Deception, and Deceit,
The Paradiſe of Fools, who ſtill believe
And truſt, tho' moſtly I their Hopes deceive.
On me the *Courtiers* Promiſes depend,
With me begin they, and with me they end;
The *Sinner's* Penitence, the *Spendthrift's* Pay,
The *Blockhead's* Wiſdom, and the *Law's* Delay,
All tend to me. Ye prying Sons of Fame!
Diſcover to the World my wondrous Name.

(4) Ænigma 100, by Mr *John Noorthouck*.

Ye ſubtile Mortals term'd Ænigmatiſts,
Who Truth, with ſtudy'd Care, in Miſts involve
And ſeeming Contradictions, to miſlead;
And like an *Ignis Fatuus* bewilder
By wanton ſportive Fraud our erring Senſes,
Then triumph in our Errors: Liſten well
To what I now relate; and by my Properties
My Name explore. — Me the Almighty made
With Structure admirable: e'er fair *Eve*,
The Mother, and Undoer of the World,

Had

Had yet that Being which enabled her
T' entail thoſe Miſeries, her wretched Sons
Groan under to this Day. ———
My Birth-place, Habitation, and my Grave,
Are in a Cave, intrench'd by barren Rocks:
There ſafely fortify'd 'gainſt all Extremes,
The ſcorching Rays of *Sol*, nor bleak *Oeolus*,
Can e'er pervade my gloomy dark Retreat.
From the Creation to this preſent Hour,
My Dwelling has been conſtantly the ſame,
And will be, till this mortal Univerſe
Experience it's final Diſſolution.
Beyond is Myſtery inexplicable,
To me in common with all terrene Beings.
Great is my Pow'r when I my Portals ope
To intimate my Pleaſure to Mankind:
All patient wait, and fly at my Commands:
Unſeeing, and unſeen, I never ſtray
From Home, but, *Phœnix*-like, live by myſelf.
Whate'er on my Good-nature ſo preſumes
My Solitude to violate, and ſcale
Thoſe Rocks, ordain'd to fortify my Cavern,
Doth fatally experience it's Miſtake,
Since it not long retains it's priſtine Form,
But puniſh'd on the Spot, and thence conſign'd
To a deep Gulph, that to the Centre tends,
Where undiſtinguiſh'd Matter rudely jumbled,
Black *Chaos* nam'd, reſides, is there intomb'd.
In me great Inconſiſtencies ſubſiſt,
That am upon Record the Beſt and Worſt,
Of all that by Omnipotence is made
Beneath the Sky: yet my ill Qualities
Are not eſſential to my Conſtitution,
But only as apply'd. But ſtop — No more
I muſt reveal; leſt I too eaſily
Myſelf unfold, and your Diſcernment wrong,
By leaving no Employment for your Skill.

(5) Ænigma 101, by Mr *S. Hammond* of *Nottingham*.

Tho' often vain and ſinful too,
I am (to give myſelf my Due)
The greateſt, ſweeteſt Bleſſing giv'n
To *Mortals*, by indulgent *Heav'n*.
The Balm of Life, Death's Comforter,
Of Peace and Joy the Harbinger; Grief's

Grief's Soother, Antidote of Care,
Grand Foe to Fear and black Deſpair.
To *Arts* and *Sciences* a Friend,
As all of them on me depend;
For None without me would be gain'd,
Or practis'd when they were attain'd.
The *Virtuous* and the *Vicious* too,
In their Purſuits have me in View;
But with the *Virtuous* I'm refin'd,
The *Vicious*, of the ſenſual Kind.
Without me Nought can truly pleaſe,
Or give the *Mind* ſubſtantial Eaſe;
And with me Nought can make afraid,
If on a right *Foundation* laid.
This habitable *World* would be
A *Deſert*, were it not for me;
For None the Ills of Life could bear,
Were I not, to aſſiſt them, near.
And tho' the *Holy Scripture* ſaith
None can be ſaved but by *Faith*,
Yet *Faith*, tho' great, will not avail
Unto *Salvation* where I fail.

(6) Ænigma 102, by Mr *W. Davis*, Writing-maſter, at *Burley*, near *Minchinhampton*, in *Glocesterſhire*.

I'm Captain of an artful Band,
And in the Front do often ſtand;
Nor *Marlb'rough* more undaunted ſtood,
When fighting for his Country's Good.
But then 'tis with full Ranks that I
Appear with Magnanimity;
For when they're broke I'm put in Fear,
And then you'll find me in the Rear.
Nor 's that the worſt of my Miſhap,
I've loſt the Feather from my Cap.
Before my Title was the *Great!*
But now make one in ev'ry Cheat;
In Calumny and Slander too,
(Vices that ruin not a Few)
And yet to Sin I'm not inclin'd,
But always of a peaceful Mind;
For notwithſtanding all that's ſaid,
In Heav'n I ſtill a Place have had.

Ye

Ye *little Maſters* tell my Name,
For you the Author wrote the ſame.

(7) Ænigma 103. by Mr *W. Davis.*

I ſprung, ye Artiſts, from the greateſt *Sire*,
And uncontroll'd extend my vaſt Deſire;
Tho' inſtantaneous is my Birth, yet I
From Pole to Pole can in an Inſtant fly;
Can (with Amazement) view the wide Expanſe,
And there behold the Planetary Dance;
Survey the Frigid and the Torrid Zone,
And hold a Chat with th' Natives of the Moon;
Can trace the pathleſs Region of the Air;
Can fly with Eaſe beyond the Starry Sphere,
And (tho' obſcurely) ſee the Happy there.
A pleaſing Theme —— my Native Country too ——
And yet, tho' moſt aſtoniſhing! ('tis true)
I'm ſeldom ſent on Errands ſo *ſublime*;
How am I fall'n! Alas! I ſpend my Time
With the *infatuated Sons* of *Men*,
For *Grandeur*, *Pleaſure*, or for ſordid *Gain*.
Be wiſer, Man! and let my Pinions ſoar,
Clip not my Wings, nor once contract my Pow'r;
'Twill, on Reflection, yield more ſolid Joys,
Than all thy vain Delights, and gilded Toys.
"No more — (you cry) nor this a Riddle call,
"The Veil's ſo thin it obvious is to All."
'Tis granted, *Sirs*; yet once more read th' above,
If not diverting —— let it uſeful prove.

(8) Ænigma 104, by Mr *Chriſt. Maſon.*

Two Heads I have of equal Size,
But ne'er a Mouth to eat;
Two Paunches ſimilar likewiſe,
Wherein is ſtow'd my Meat.
Digeſtion I have none, for why?
(I leave you Room to think)
My Diet is both harſh and dry,
Yet not allow'd to drink.
Nor Hands nor Feet at my Command,
Yet commonly I run;
I on my Heads alternate ſtand,
But if I fall undone.

A com-

A common Ventricle I've got,
Where two Larynges join;
But to have Guts is not my Lot,
Nor have I yet a Groin.
Uſeful by Land, but more by Sea,
I'm daily in Requeſt;
An Emblem of Mortality,
But when I am at Reſt.

(9) Ænigma 105, by Mr *Sam. Bamfield.*

From diff'rent Creatures habiting the Earth,
Irrational and Rational, I claim my Birth:
From Worm to Man receive I Contribution,
And thence become of laſting Conſtitution.
Bound to a hollow Tree for ſome few Days,
And thence am loos'd to ſpeak my Maſter's Praiſe;
Oft with high Front and ſpreading Tail moſt bold;
And ſometimes kept as Miſers keep their Gold.
In Robes of Innocence am neatly dreſs'd;
Am an Oppreſſor, and I am oppreſs'd:
Move by a gentle Touch, howe'er ſo ſmall,
Yet am faſt bound to wait on ev'ry Call.
The proud Poſſeſſor oft does me diſgrace,
And fills me up with nought but empty Space.
Altho' to Pride and Foppery inclin'd,
For the moſt Part, I always ſit behind;
Yet often ſhew a thouſand circling Charms,
And daily ſkreen you from as many Harms.
Thus Good; I of my Maſter get a-head,
But not ſuperior — Government I dread.
Yet there is one above that does preſide,
Which hurts my Shape and does much Neatneſs hide,
But as 'tis for Defence, I'll be content,
Altho' he ſeems from the dark Regions ſent.

(10) Ænigma 106, by Mr *Samuel Hodgkin.*

In Figure I am always known,
Much like the *Fruſtum* of a *Cone*;
My Outſide (which may raiſe Surprize)
Is ſet all o'er with num'rous Eyes,
With which I drive a ſhining Dart,
(That often plays a *Cupid's* Part)
Time after Time with wondrous Art.

My

My Inſide or Concavity,
Is empty when I uſeleſs lie;
But when employ'd in public Good,
Is fill'd with Human Fleſh and Blood.
From this Account pray tell my Name,
From Earth I ſprung, and roſe to Fame.

A PARADOX, by Mr *S. Hammond*, of *Nottingham*.

FRIEND *Dyke* did propoſe *Twelve* Trees in *Six* Rows,
But I would with *Fewer* have *More*;
(*Viz.*) Nine Rows with *Ten*, and Three of thoſe when
They're planted muſt each Rows have *Four*.

REBUS, by Ditto.

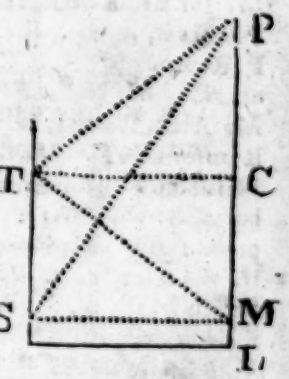
To a *Word* in one Language which ſignifies *People*,
And what you may commonly find in a *Steeple*;
The *Compound* thus form'd, will fairly preſent
The NAME of a *Town* in the County of *Kent*.

An Anagramic REBUS, by Mr *Chriſt. Maſon*.

When *Somnus* ſeizes on the lazy Lout,
For th' Sign he makes, the Term you're to find out;
For *Oliver*, there's oft a Vulgar Name,
Which join'd to th' former gives a Place of Fame.

Queſt. 3. *Diary* 1753, ſolv'd by Mr *Joſeph Orchard*.

Let MP be the May-pole, ST the Diſt. of the Stations = 30 Foot = a; Tangent of $\angle PTM = 56° 90' = t$, TC = x, and PC = y; then will PM = $a+y$; and *per* ſim. Triangles PMS, PCT, $a+y : x :: x : y$. $\therefore ay+yy = x^2$, *per* Trigon. $\frac{ax+yx}{xx-ay} = t$; from theſe two Equations x being exterminated, $y = \frac{a}{t^{\frac{2}{3}}-1} = 96{,}5898$, to which add CL = 35 Foot, the Sum is 131,5898, the Height of the Pole required.



An

the Numerical Letters i, ii, &c. ſhewing the Queſtions, and the Fig. 1, 2, &c. the Ænig. each anſwd. P. R. & An. the Paradox Reb. & Anagr.

MR Anth. Arch all Q. but 7. all Æ. Mr Tho. Allen vii, viii, x. all Æ. P. R. An. Ecl. Miſs Angelica all Æ. Mr Benj. Blakelock ii, iii, v, vii, viii, x. all Æ. P. R. An. Mr Geo. Butler all Æ. Mr A. prop. 1 Æ. Mr Sam. Bamfield all Q. but i. P. R. Mr Nath. Berry vii. Mr Wm Bevil ii, iii, iv, v, vii, viii. Mr T. B. P. Miſs all Æ. R. An. Miſs Benſon all Æ. but 5. R. Mr Wm Clark all Æ. but 6. Mr Chriſt. Cooke all Æ. Careleſs Jack ii, iii, vii. all Æ. P. R. An. Mr John Cheſter all Æ. P. R. An. Mr Tho. Champion all Æ. P. R. An. prop. 2 Æ. Miſs Cantrill all Æ. R. Clarinda all Æ. An. Mr John Dyke all Æ. but 4. R. Mr Tim. Drury i, ii, vii, viii. 1, 3, 5, 6, 7, 8. P. R. An. Mr Benj. Donn all Q. but xi. all Æ. P. R. An. Mr Rob. Dalton 1, 3, 4, 5, 6, 7. P. Mr Cha. Dyer ii, iii, v, vii, viii. all Æ. P. Mr D. Davis all Æ. Mr Wm Enefer all Q. but ix. all Æ. R. Miſs Enfield all Æ. Mr Gillyat vii. P. R. Mr Zach. Gaſkill ii, iii, iv, vii, viii, ix. and iii in Diary 1753. Mr Ed. Greenſted Ecl. Mr P. George all Q. but ix and x. Mr Rich. Gibbons ii, iii, v, vii, viii. all Æ. P. R. An. Mr Tho. Garrard all Q. Mr Tho. Grimes viii. 1, 3, 4, 7, 8. P. R. Mr James Hoggard x. all Æ. R. Mr Wm Heaford all Æ. P. R. prop. a Par. Mr Joſ. Heartley all Æ. P. R. An. Mr Sam. Hodgkin all Æ. prop. 2 Æ. Mr Tho. Hare i, ii, iii, iv, vi, vii. all Æ. P. R. An. Mr Sam. Hammond all Æ. P. R. An. Mr Joſhua Holroyd ii, iii, vii, viii. all Æ. P. R. An. Mr Sam. Handford all Æ. but 3. R. An. Mr John Heartley Sen. ii, iii, vii, viii, ix. prop. 3 Q. Miſs Dolly Holden all Æ. Mr Cha. Jacka all Æ. P. R. An. Mr Wm Kingſton all Q. all Æ. R. An. Mr John Kirkby i, ii, iii, vii, ix. Mr Tho. Love all Æ. R. Mr John Lewin all Æ. but 2. P. R. prop. a Reb. Lycurgus 5, 8. Mr Tho. Moſs all Q. but x. Mr Cha. Maſon vii, viii. prop. i Q. Mr Chriſt. Maſon all Æ. P. R. An. prop. i Q. Mr Sam. Moore all Æ. Mr Rob. March all Æ. P. R. An. prop. 1 Æ. Mr Wm Mobbs all Æ. P. R. An. Mr Steph. Metcalfe ii, vii, viii. Mr Anth. Moore all Æ. R. Mr John Nichols ii, v, vii, viii. all Æ. P. R. An. Mr John Noorthouck 1, 2, 5, 6, 8. Par. R. Mr Joſ. Orchard ii, iii, iv, v, vii. all Æ. but 2. P. R. An. Mr Rob. Pitches ii, iv, vii, viii. all Æ. P. R. An. Mr Sam. Pilgrim all Æ. but 4. P. R. An. Mr Rob. Pickburn ii, viii. all Æ. P. R. An. Mr Tho. Pooke all Æ. Mr Nath. Peat prop. 1 Æ. Mr Ed. Rogers ii, v, vii. prop. i Q. Mr Alex. Rowe i, iv, v, vii. all Æ. P. R. prop. 2 Q. and 1 Æ. Mr J. Ramſey all Æ. Mr Wm Richardſon ii, iii, iv, vii, viii. all Æ. P. R. An. Miſs Sop. Rogers all Æ. but 3 and 4. P. R. Mr John Randles all Æ. but 4, 8. vii. Mr Tho. Royle all Æ. P. R. An. Mr Rob. Robinſon prop. 1 Æ. Mr Paul Sharp ii, iii, iv, v, vii. all Æ. Mr Wm Spalton ii, vii. 2, 3, 5, 7. P. R. Mr Geo. Stapley all Æ. but 5. Mr Cha. Smith ii, iii, iv, v, vii, viii. And. Stiffrump prop. 1 Æ. Mr Joſ. Scot ii, iv, v, vii, viii. all Æ. P. R. An. Mr Wm Smith 1, 2, 7. P. R. Mr Wm Swift all Æ. P. R. An. Tryphena all Æ. Mr Tho. Todd v. Mr Iſaac Tarrant all Æ. R. An. Mr John Tapner all Æ. but 8. An. Engliſh Tom ii, iii, v, vi, viii. prop. 1 Q. and 1 Æ. Mr Benj. Thearle i, ii. all Æ. but 2 and 4. R. P. An. Miſs Martha Thearle 1, 5, 7, 8. Tabularius ii, iii, vi, vii, viii. Mr John Taylor all Æ. P. R. Mr J. Thorpe, Lunations. Mr Cha. Underwood all Æ. Mr Tho. Whilton all Æ. P. Mr Geo. Watſon all Æ. P. R An. Ohim Widd all Æ. Mr Harland Widd all Q. but ii. all Æ. John Fern. Molly Webſter all Æ. P. R. An.

FINIS.